





Cornell University Library

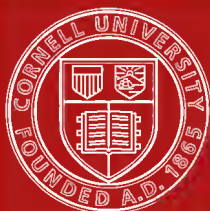
BF161 .H23

Problem of mind and body / by S. T. Han.



3 1924 029 080 758

olin



Cornell University
Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

韩述组留赠

THE PROBLEM OF MIND AND BODY

BY

S. T. HAN, M. A.

ASSOCIATE PROFESSOR OF PSYCHOLOGY
AND LOGIC IN THE NATIONAL UNIVERSITY
OF PEKING

WITH A FOREWORD

BY

PROF. A. MAIR



~~7266~~

~~B175~~

A530741

BF

161

H23

Gift of

S.T. HAN

FOREWORD.

By Prof. A. Mair.

In the account of his visit to Thomas Carlyle at Craigenputtock, Emerson tells us how they went out to walk over the hills and sat to talk of the immortality of the soul. "It was not Carlyle's fault," says the American seer, "that we talked on this topic, for he has the natural disinclination of every nimble spirit to bruise itself against walls and did not like to place himself where no step can be taken." The reading of the volume before us has called up again that incident and these words. For there is to some temperaments a similar shrinking from the discussion of the problem of Body and Mind which has, from the time of Descartes at least, been the *pons asinorum* of Philosophy. One might well be pardoned for a hesitancy in entering upon the serious consideration of a problem for the solution or attempted solution of which nothing less than a whole metaphysic, a reasoned view of the whole structure of reality, is finally demanded. To other temperaments however this is the excitement, this the challenge. Such do not petulantly complain of the variety of offered answers to this fundamental question. Recognising that, in these efforts to

FOREWORD

unite two great and, even now, but partially understood realms of fact, difficulties of no ordinary kind must be faced, they are more than tolerant of their philosophical forbears who have had the courage to face those difficulties and are inspired to continue the enterprise.

Apart however from the pure metaphysical motive there are other impulsions to speculation upon this fateful topic. The bearing of the answer we are prepared to give upon a problem of such universal human interest as that of the immortality of the soul aforementioned is at once obvious. The Philosophy of Religion has a great stake in this controversy. To Psychology also it is a matter of much moment. In strictness, it might be maintained, it lies outside the domain of Psychology which has to do with the behaviour of the mind as Physics has to do with the behaviour of matter. But, with the development of the borderland sciences of Psycho-Physics and Psycho-Physiology, no psychologist can evade the question; and though he may not feel himself bound to embark on a full metaphysical demonstration he must form at least a working conception of the mode of relation of the physical and the psychical.

We must therefore be grateful to our author for so patiently, shrewdly and lucidly setting forth the nature of the problem and for giving us, within moderate compass, a critical estimate of the value of the representative theories in this field.

He shews by his treatment that he possesses both tenacity and resource of mind. When it is

FOREWORD

remembered, as it should be remembered, that Mr. Han is expressing himself in what is to him a foreign tongue; we must recognise that his is a remarkable achievement. A western student of Philosophy producing a work of equal merit in Chinese, the mother tongue of our author, would have reason to plume himself upon it.

The present volume is based on work done in this University some eight years ago. Since then the author has not had the opportunity of keeping in touch with recent philosophical movements in this hemisphere and we therefore have not the advantage of his judgment upon such contributions to his theme as those made e. g. by Professor Alexander and others of the Neo-Realistic persuasion. In the circumstances his estimate would have been of peculiar interest — not least, perhaps, to the Neo-Realists.

The book before us is worthy of a welcome for its own sake. As an indication of the growth of the internationalism of thought and the intellectual *rapprochement* of two great sections of mankind it is doubly welcome.

Alexander Mair.

Liverpool University.

June 1921.

PREFACE.

My purpose in publishing this work is not to defend the doctrine of interactionism as currently stated, but rather to establish what may be termed a theory of '*Correlative Psycho-Physical Interaction*'. Such a theory may be regarded as something of a compromise between parallelism and interactionism. In view of the fact that mental and bodily processes run parallel to, as well as interact with, one another, we must admit that parallelism and interactionism each has its own merits, for each represents at least one aspect of the relation between mind and body. Accordingly, it seems better to reconcile the first doctrine with the second, instead of absolutely affirming the one and denying the other. Of course, a reconciliation between parallelism and interactionism may appear, at first sight, a somewhat difficult feat, but I have no doubt that the more our knowledge of the problem advances, the more possible will such a reconciliation become.

In order to reconcile the two theories, it is essential that neither the parallelist nor the interactionist should hold his own view too strictly. Each to a certain extent must give way to the

PREFACE

other; for each of the theories has, as we shall see, its own merits. When we are searching for 'contents', 'elements', or 'different aspects' of the physical and psychical system, parallelism may be the better hypothesis on which to work. When we are inquiring into the association of, or the interrelation between mental and material processes, interactionism appears to be the more suitable for that purpose. In any case, there is a very close connection between the two theories, and progress in the development of one theory will involve similar progress in the other. Thus, to be genuinely thorough, the parallelistic view of the correlation between mind and body seems to extend to causal relations in the parallelistic principle itself. And such a theory as '*Correlative Psycho-physical Interaction*' can only be established by presupposing a parallelistic view of the relation between mind and body. It is for this reason that some writers — Prof. Strong for example — have claimed that parallelism which extends the correspondence to casual relationship is more justly entitled to the name of parallelism than one which merely assumes a brain event for every mental state; and Prof. James asserts that "the concomitance in the midst of absolute separateness is an utterly irrational notion. It is to my mind quite inconceivable that consciousness should have nothing to do with a business which it so faithfully attends." This seems to me to be the very basis on which a theory of '*Correlative Psycho-physical Interaction*' is to be established.

PREFACE

The books which I found most useful for consultation and suggestion are Lotze's "Metaphysics" Strong's "Why the Mind has a Body" and McDougall's "Body and Mind." I wish to express my indebtedness to the authors of these volumes.

Moreover, I must acknowledge my indebtedness to Prof. Mair of Liverpool University and Mr. Cyril Burt of London for their guidance in the initial stages of the work as well as for their numerous valuable suggestions and criticisms, as the work proceeded.

Especially do I desire to tender my profound thanks to my friend Mr. J. P. Scott, who besides being a specialist in English language & Philology, also displays a keen interest in psychological problems, for his unwearied kindness in assisting me in English, in reading through the final manuscript as well as the proofs, and in giving some very useful suggestions. I further wish to express my thanks to my friend Dr. D. Yule for his kind assistance rendered in reading the proofs.

I hope that among those who honour this book by their attention some may be found to develop this theory as well as criticise it. Finally, I must ask my readers to remember that English is to me a foreign tongue and to overlook any defects or shortcomings in my use of it.

S. T. Han.

Battersea, London.

April, 1922.

CONTENTS.

INTRODUCTION.

PART I.

EMPIRICAL DATA.

CHAPTER I.

DESCRIPTION OF PHYSIOLOGICAL AND PSYCHICAL PROCESSES.

Collection of empirical data necessary — The nervous system — its microscopic elements — their functions — The Neurone — The Synapse -- The functional unit — The physiological process is "conduction" — Gross structure — The central nervous system and the sympathetic system — The spinal cord and processes — The brain and its bearing on conscious life — Psychical processes of mental life — Consciousness — Degree of its intensity — Qualitative characteristics of consciousness; (1) Continuity (2) Variation (3) Unity.

CHAPTER II.

CORRESPONDENCE BETWEEN THE NERVOUS SYSTEM AND MENTAL LIFE.

Correspondence a clue to the connection between mind and body — Correspondence between the nervous system and mental life in general — (1) Their gradual development correlative — (2) Higher and lower levels in both systems — (3) One for preserving the bodily self, the other for realizing the spiritual Ego — (4) The control of the higher level neces-

CONTENTS

sary for the complex processes in both systems — (5) Both ultimately processes of change — (6) Both ultimately one and continuous — Correspondence between nervous and psychical processes in detail — (1) Principle of the "specific" energies of sensory nerves — (2) Localization of cerebral function.

CHAPTER III.

VARIOUS RELATIONS BETWEEN MIND AND BODY REVEALED BY ORDINARY EXPERIENCE.

Ordinary facts showing the relationship between mind and body roughly classified — (1) Process seemingly purely physical — Dr. McDougall's view of reflex action — (2) Process from physical to psychical. — Action of the body upon mind — Mind dependent upon body — (3) Process seemingly purely psychical — Relation of higher mental states to brain processes and bodily activity — Every mental process conditioned by physical correlate, therefore a psycho-physical process — (4) Process from psychical to physical — Action of mind upon body — All mental processes followed by physiological changes.

CHAPTER IV.

SUMMARY VIEW OF THE VARIOUS RELATIONS BETWEEN MIND AND BODY FROM DIFFERENT STANDPOINTS.

Diffrence between various theories consists in different interpretations of the same experienced facts — Different views expressed by different theories — Each supported by empirical facts.

PART II.

THEORETICAL PRINCIPLES.

CHAPTER V.

STATEMENT OF THE PRINCIPAL THEORIES.

Principal theories concerning the relationship between mind and body, viz., Automatism, Parallelism and Interactionism. — Definition of Automatism — of Interactionism — of Parallelism.

CONTENTS

CHAPTER VI.

FUNDAMENTAL PROBLEMS CONCERNING THE RELATIONSHIP BETWEEN MIND AND BODY.

The problem of temporal relation — Its bearing on the different theories — The problem of causal relation — Its bearing on the theories — The problem of the efficiency of consciousness — Its bearing on the theories.

CHAPTER VII.

THE THEORY OF AUTOMATISM.

Modern scientific principles give strength to automatism — Two fundamental propositions of this theory — The illustration of consciousness as the shadow of a machine, &c. — The principal views summarised — The view of consciousness as a function of the brain — Objections to this view — Sensation as an effect of physical changes — Difficulties discussed — Mr. Hodgson's argument — Is our voluntary action purely mechanical like reflex action? — The former not the same as the latter — Is the conception of consciousness as a mere epiphenomenon of the brain legitimate? — Mr. Hodgson's view — Consciousness not a pure effect only — not something residual — equally as real and efficient as brain action — Külpe's view of mind and body — Is matter the ultimate reality? — This question to be solved by metaphysics — Naïve realism. — Criticisms — The theory of "things-in-themselves". — Criticisms — Automatism unable to derive support from either.

CHAPTER VIII.

THE THEORY OF PARALLELISM.

Popular naïve parallelism distinguished from metaphysical parallelism — The former only formulates known facts — Parallelism either in broad or narrow sense — General arguments favouring popular naïve parallelism — (1) Advantage of division of labour — (2) Value of working hypothesis — (3) Reconciliation between philosophy and science — Certain principles in science in favour — (1) The principle

CONTENTS

of kinetic mechanism (2) The law of conservation of energy (3) Cerebral anatomy (4) The reflex type of all nervous processes (5) Analogy of mental and physiological disposition — Advantages of this theory — Metaphysical parallelism — Two forms — (1) Psycho-physical Monism — (a) The Two-aspect theory of Spinoza discussed — (b) Kant's Noumenal theory discussed — (2) Psycho-physical Idealism — Distinguished from subjective idealism — Plausible points in this theory — (1) Monistic scheme for physical and psychical (2) Efficiency and reality of mind (3) An idealistic view based on psycho-physical correlation — Explanations of consciousness as a reality. — Clifford's interpretation — Mind-stuff view — Strong's interpretation — Idealistic view based on empirical evidence — The principle of identity or of a single series the essence of this theory — Difficulties and criticisms — Consciousness cannot be explained by a purely materialistic view — Lotze's explanation of the unity of consciousness — Difficulty of reconciling the mechanical and the teleological determination in this theory. — Summary of criticisms.

CHAPTER IX.

THE THEORY OF INTERACTIONISM.

Descartes the founder of modern interactionism — Arguments for automatism and parallelism do not prove interaction impossible — Older view of interaction — Causal relations between processes in psycho-physical system explained by a series of propositions — Correlative psycho-physical interaction — The relation between mind and body summed up under two heads — (1) Psycho-physical correlation. — (2) Psycho-physical interaction — One necessary for the other — The principal arguments against interactionism — (1) The inconceivability of psycho-physical interaction — Not justifiable to deduce the impossibility of psycho-physical interaction from its conceivability — (2) The law of the conservation of energy — Possibility of extending the great principle of energy to mental process — (3) Principles of biology — Arguments from biological principles no weightier against than for inter-

CONTENTS

actionism — Ultimate arguments in favour — Ultimate problems to be solved by interactionists — Conceptions of mind and matter correlative and supplementary — Inseparability of form and substance compared with inseparability of mind and matter — A system of physico-psychical unity and a system of psycho-physical unity — Should there be a division of mind from matter? — What is the ultimate relation of mind and matter? — M. Flournoy's view — The ultimate relation of mind and matter on the basis of their antithetic nature — The relationship between mind and body consists in their interaction — Lotze's view — The whole sphere of experience and knowledge interpreted in terms of interaction — Amplification of Prof. Bergson's view that consciousness and matter meet each other in perception — The so-called "ultimate reality" interpreted by this principle — Lotze's view of reality — Discussion of the views on reality of the materialist, idealist, solipsist, and the believer in "things-in-themselves" — What is reality? — Mind gives category or form of reality, and matter supplies material — Interaction in wider sense applied to the process of understanding reality — Mind and matter each has equal claim to be of the essence of reality.

CONCLUSION

THE PROBLEM OF MIND AND BODY

INTRODUCTION

The problem of the relation of body and mind has in one form or another occupied the attention of philosophers from pre-Socratic times to the present day and is still the subject of active debate. It is obviously of interest to the plain man as well as to the philosopher. But the plain man is content with a very summary solution—such as e. g., the old and still widely received view that the body is an organ of the mind, a means by which it expresses itself as the musician expresses himself through an instrument. If we desire a more thorough and reasoned treatment of the question, it is to philosophy we must turn.

From the standpoint of philosophy, some writers hold that mind and body are two separate and distinct things, which, however, interact with one another. Others maintain that there is no

THE PROBLEM OF MIND AND BODY

causal relation between mind and body at all, but that they run parallel to one another without affecting each other. Whatever the view of the ordinary person or that of the philosopher may be, mind and body are, nevertheless, generally regarded as two disparate and distinct things, different in their essence, the one being spiritual, abstract, and non-spatial, the other material, substantial, and spatial. There is really a gulf between mind and body over which it is hardly possible to pass from one to the other. Hence, the question of the relation between mind and body is still in dispute even in such a scientific world as the present.

Because modern psychologists are not satisfied with the introspective method of observing the mental processes, the experimental method has been brought into play, and in consequence of its introduction, a great deal of progress has been made in the science of psychology in recent years. This progress has thrown much light on the question of the relationship between mind and body. As we have just said, the mental process is non-spatial. Since we can experiment only on something which is material and spatial, and not on something which is spiritual and non-spatial, it is thought that a thorough understanding of the functions of the nervous system, which always correspond with the mental process, is necessary for experimental psychologists, who try to combine the two kinds of research, the physiological and the psychological, and so

INTRODUCTION

seek, by experimental methods, for the relation between the structure and functions of the nervous system and the corresponding psychical processes, in order to establish a school of physiological psychology.

Physiological psychology, on the one hand, is connected with physical science, because the human body is material and forms a part of the physical world. On the other hand, it is closely connected with the science of biology, for human beings are supposed to have evolved from the lower animals, and thus mental phenomena seem to be factors in bodily evolution. Therefore, it should be possible to apply the laws of the physical world as well as the laws of biology to physiological psychology. This is why most modern psychologists try to investigate the question as to the relationship between mind and body from both the physical and the biological point of view.

The great principle in physics is the doctrine of the conservation of energy. It is still a question whether this principle is universally applicable to all natural phenomena or not. In other words, it is doubtful whether this principle is a law which can be applied to all natural facts, or is only a useful hypothesis applicable to certain classes of physical facts. Some psychologists (automatists and parallelists) maintain the former view, while others (interactionists) support the latter. According to the various answers to the above question, the relation between mind and body is viewed and interpreted in different ways.

THE PROBLEM OF MIND AND BODY

In biology the principle of Darwinism occupies a dominant position. It asserts the mechanical principle of life, but does not conceive of the mind as a factor in bodily evolution. Though many biologists think that it is not enough to account for the actual stages of evolution by the principle of natural selection only, it is still a question whether the emanation of consciousness is an additional factor in the process of natural evolution. Some psychologists answer the above question by "Yes" (the interactionists), while others reply with a negative (the automatists and parallelists). Therefore, even from the biological point of view, there are different interpretations of the relationship between mind and body.

From the above statement, we can see that divergent and even contradictory views are held by various writers as to the question of the relation between mind and body. Let us now more closely consider what their different views are and try to summarize them.

(1) Automatism or Materialism. — This is a new form of a very old theory. Most of the early Greek philosophers were materialists. We must remember, however, that there is a difference between the old materialism and the modern, in that the former, while keeping within the bounds of materialism, draws a clear distinction between mind and body; the latter regards the mental as a product or function of the material, and thus thinks that mental processes can never be the

INTRODUCTION

cause of, or affect the brain process. Therefore, modern materialism establishes a one-sided causal relation between mind and body on the basis of physical principles.

(2) *Interactionism.* — This is a very popular view which regards mind and body as being able to interact or to react upon one another. It seems to be clearly exemplified in sensation where the body appears to act upon the mind, and in volition where the mind appears to act upon the body. The view had never been examined from a metaphysical point of view until the time of Descartes. He conceived of mind and body as absolutely distinct in substance, but reacting upon each other at the pineal gland .

It seems impossible however, to apply the great principle of physics, the principle of the conservation of energy, to the psychical processes in accordance with this theory. That is why some modern interactionists try to make consciousness part of the energy of the universe in order to subject it to the principle of conservation. Others, to avoid the difficulty of applying the law of energy to consciousness, argue that it can only hold true in the sphere of physical facts. This is indeed a point which seems to tell strongly against the theory of interactionism and must be discussed in detail afterwards.

(3) *Parallelism.* — This is a rather modern theory, which is derived on the one hand from the doctrine of Spinoza that mind and matter are co-eternal and infinite attributes of one absolute sub-

THE PROBLEM OF MIND AND BODY

stance, and on the other hand, owes a great deal to the progress of modern physiological psychology. It asserts that mental processes and brain processes run strictly parallel to one another, but that the brain has no influence upon the mental processes, nor the mental processes any influence upon the brain. The physical and the psychical are separate systems, each having laws which govern the processes in its own system alone. On this view it is assumed that the physical world is a closed and finite system of energy. The principle of the conservation of energy is the chief support for this theory.

Both automatism and interactionism assume that there is some causal relation between mind and body, though they differ in their several points of view. Parallelism denies such a relationship. Automatism, however, agrees with parallelism in believing that no psychical process can "cause" or "influence" a physical process. Interactionism denies this.

Each of the three theories above mentioned has a value of its own as well as its own weaknesses. If we wish to arrive at a decision respecting these three theories, we must try to investigate and solve the question of the relationship between mind and body from the following points of view: —

(1) By appealing to ordinary experience — By "ordinary experience" we mean "the facts we experience in ordinary life". There is no doubt

INTRODUCTION

that a great deal concerning the relation between mind and body can be revealed in the light of our ordinary experience. But it should be remembered that many things in our ordinary experience are illusory, for what the ordinary person thinks true in his experience may not be true from the scientists' point of view, and many of the experiences of scientists and philosophers are never thought of by the plain man. For instance, the plain man thinks the cause of pain to be in the limb or in some such part of the body. He would be surprised to learn that the feeling of pain is, in fact, caused by the excitation of the cortex of the brain. Thus, one and the same experienced fact may be interpreted in different ways. Of course, the interpretation of the nature of, and the relation between, mind and body by ordinary experience can hardly be so accurate as that offered by the scientist. Therefore, an appeal to ordinary experience only is inadequate for the purpose of investigating the question we are to discuss. We have, then, to pursue our examination farther.

(2) *By appealing to scientific knowledge. — The sciences concerned with the relationship between mind and body are physics, biology, physiology, and psychology — especially the two latter. For this reason, we must glance at the principles of these sciences before we attempt to discuss fully the question of the relationship between mind and body. First of all, we must remember that all scientific principles are based on empirical*

THE PROBLEM OF MIND AND BODY

generalizations from a certain class of natural phenomena. Consequently, interpretations of them seem to hold good only in their own sphere. In other words, they cannot explain our experience as a whole. As far as the question of the relation between mind and body is recognised as the "ultimate of ultimate problems", it cannot be satisfactorily solved by scientific principles derived from inductive generalisations of this order. Thus we must go farther still, and,

(3) *Appeal to metaphysical principles. — With regard to the above mentioned theories which attempt to explain the relationship between mind and body; though each of them can derive strength from certain scientific hypotheses, yet through none of them can we discover the ultimate nature of, or relation between, the mental and physical systems. In order to examine the validity of these theories from a more profound point of view, we must go to the sphere of metaphysics, for if we wish to prove that interactionism is the true theory, we must search for the ultimate explanation of the interaction between mind and body. If parallelism is to be established, we should find out the ground of the special relation of physical and mental states which it posits.*

There are many questions in metaphysics which are very closely connected with the relationship between mind and body. These questions are: What is the ultimate nature of mind and matter? Is "mind" or "matter" the more fundamental conception? Is it possible for

INTRODUCTION

us to identify the universe either with matter or mind? Is it true that material objects can exist independently of mind? All these questions have to be answered, before debating the so-called "ultimate of ultimate problems". It is for this reason that our discussion on the subject at issue is not complete without taking into consideration the metaphysical point of view.

Thus, the question of the relationship between mind and body is a problem which should be examined not only from the facts of ordinary experience, but from scientifically observed facts as well, and solved not only from scientific principles, but also from the principles of metaphysics.

Therefore, I propose to divide the discussion into two parts for the sake of convenience.

Part I — dealing with empirical facts (or data) which have been collected in connection with the relation between mind and body, either in ordinary life, or from scientific observation.

Part II — dealing with theoretical principles which throw light on the relationship between mind and matter, either from the scientific or from the metaphysical standpoint.

PART I.

EMPIRICAL DATA.

CHAPTER I.

DESCRIPTION OF THE PHYSIOLOGICAL AND PSYCHICAL PROCESSES.

In our treatment of the subject of the relation between mind and body, it is necessary, first of all, to gather sufficient empirical data regarding body and mind in preparation for the discussion of their relationship. The best method of obtaining such data is firstly to enquire both what the physical processes of the nervous system are and what are the psychical processes of mental life. In the first chapter, then, a special description will be given of the physiological processes of the nervous system, on the one hand, and of the psychical processes of mental life, on the other. We must remember, however, that to treat these processes in detail would carry us too far afield. Hence, a general sketch of them will be sufficient for our present purpose.

THE PROBLEM OF MIND AND BODY

We must know the constituent elements of the nervous system and its general structure, before we can examine its functions or processes satisfactorily. In any examination of the physiology of the nervous system, we may divide the investigation into two parts: —

(1) An inquiry into the microscopic elements of the nervous system and their functions.

(2) An inquiry into the gross structure of the nervous system and its processes.

(1) The nervous system is commonly divided into nerve-cells and nerve-fibres. But the latter, from the physiological standpoint, really consist of long processes or axones of nerve-cells; and the former, various in their shapes and sizes, are really the nucleated portions of the true nerve, or its “cell-body”, so that it is only the nerve-cells, called neurones, which are the fundamental elements of the nervous system.

Each neurone consists of a nucleated body, and two or more processes; it is a self-contained body, and a vital unit. It is, as a rule, prolonged into one or more fine protoplasmic processes. One of these processes, which is longer than others, is called the axone. It is the axones of neurones which constitute the nerve-fibres of peripheral nerves. The axone in most cases, is encased by a white fatty substance, called medulla, for its protection. The axones of neurones are often several feet in length, though they are never joined to one another. The other processes of the

EMPIRICAL DATA

cell-body are generally of shorter length, and are in most cases, divided into many branches. For this reason they are generally called "dendrites".

Although the neurone is a self-contained body, it is not an independent one, for neurones are always found connected with one another. Millions of neurones can be distinguished in the human body, but all of them are inter-related by junctions with one another in such an extremely complex way that exciting or disturbing any one of them always results in affecting or influencing the others. This is due to the numerous junctions between neurones. A cell-junction is generally known as a "synapse", i. e. "the place of juxtaposition of the end of one neurone against the beginning of another". It is by such "cell-junctions" or "synapses" that two or more neurones can be connected together into neural chains. Such junctions between neurones are more complexly organised in the higher nervous centres than in the lower ones.

It is from the junctions between neurones that the functional unit of the nervous system springs. This is the "reflex", "afferent-efferent", or "sensori-motor" arc. The simplest form of reflex arc consists of at least two neurones joined end to end, a sensory or afferent, and a motor or efferent neurone. The processes issuing from the former and the latter are called the sensory or afferent fibres, and the motor or efferent fibres respectively. It is through the sensori-motor arc, by both afferent and efferent fibres, that all impul-

THE PROBLEM OF MIND AND BODY

ses in the nervous system are conducted from one part of the body to the other, i. e. from the sense-organs to the muscles. But it should be noted, that "even a reflex arc of the spinal cord may consist of a chain of several neurones thus joined end to end, and in the complex arcs of the higher levels, the number thus joined in series may be still greater". Thus, the neural arcs are really laid into a conduction series.

Since impulses are, as a rule, transmitted from one part to another through synapses, the chief function of a synapse seems to be the direction of nervous impulses. Again, since there are manifold modifications of and complex ramifications in the transmission of nervous impulses along the neural arcs, the special feature of cell-junctions is to present a certain resistance to the passage of impulses. Therefore, although the structure of the synapse is still far from being clearly understood, there seems no doubt that it performs an important function in the transmission of nervous impulses through the sensori-motor arcs. On the other hand, the neurones, though trophic units, do not seem in themselves to play any important part in the conduction or direction of neural impulses through the numerous neural arcs. We must, however, remember that neural arcs are not in themselves without function, for those neurones which have long axones have very large cell-bodies, and the cell-body presides over the nutrition of the whole cell. Hence it is a social

function that neurones perform, concerned with the nutrition and economy of the whole organism.

Having roughly investigated the constituents of the nervous system and their functions, we see that the central nervous system, on its neurone basis, is an organisation for bringing afferent into touch with efferent neurones. Consequently, we may sum up the physiological process of the whole nervous system in one word "conduction". Such "conduction" consists in the transmission of nervous impulses through a series of neural chains building up the system. Again, we find that the simplest reflex action is always performed by such a conduction, for it is generally carried out by means of a simple sensori-motor nervous arc in response to a stimulus applied to a sense-organ. This may be regarded as the fundamental type of all nervous actions, notwithstanding the fact that they may be very complex in form. In other words, it can be called "a unit of the nervous process". What, then, are the chief organs which perform such a function of conduction and lead to a reflex action? All these are performed by the cell-processes which are generally known as the nerve-fibres, including afferent and efferent nerve-fibres respectively. However, it should be remembered that such nerve-fibres are also important organs for our psychological processes, especially in sensations and motor acts, for the function of efferent nerve-fibres is to convey impulses from the central nervous system to the sense-organs of the body, whilst the function of afferent

THE PROBLEM OF MIND AND BODY

nerve-fibres is to transmit the impulse produced by environmental stimuli on the peripheral part of the body to the central nervous system. To further our study of the physiological process which is especially concerned with the psychological facts, it is necessary for us to proceed to the second part of our examination, i. e. the general structure of the nervous system and the processes in it.

(2) The general structure of the nervous system may be divided into:

(a) The central nervous system, i. e. cerebrospinal system, which is situated within the cranium and spinal canal. To this system belong the spinal cord and the brain.

(b) The sympathetic system, which contains nervous elements, known as ganglia, lying along the spinal column.

The latter system was for long supposed to be independent of the former. However, we now know that there is a close connection between them, since the nerves in the sympathetic system are under the control of some part of the central nervous system. To the sympathetic system belong the nerves of those organs (viscera, abdomen, etc.) whose function is to maintain the vital efficiency of the whole body, and to purify the blood as well as to regulate its flow to various parts of the body. What we must study at this point, then is not the sympathetic system, but the central nervous system, which is the physiological basis for our mental processes. There are two

EMPIRICAL DATA

important sections in this system, viz., the spinal cord and the brain. Let us study the spinal cord first, and then the brain.

The Spinal Cord. — This is that part of the central nervous system, which lies in the spinal canal, and of which the upper part enters the cranium, and connects the rest with the brain. The spinal cord is connected by nerve-fibres with all the sense-organs and muscles of the body on the one hand, and with the higher part of the nervous system, i. e. the cerebral hemispheres, on the other. Its main function is either to convey the impulses produced by environmental stimuli from the sense-organs to the higher nervous centres, or to receive impulses from the higher centres, and pass them on to the muscles through the nerve-fibres. Thus, it is a central meeting place for the nerve-paths arriving from or issuing to all the parts of the nervous system.

Besides this, the spinal cord is itself a nerve-centre which is independent of the higher centres, in so far as it is the seat of mere reflex movements. What is a reflex action? It is the reaction produced by an external stimulus acting, through some sense-organ, upon nerves which communicate, through a nerve-centre in the spinal cord, with other nerves, going to muscles, through which the final effect is obtained. Such reaction may be very simple or complex. Its simplest form is sometimes called "a reflex", i. e. the unit of nervous action. Its complex form is, however, compounded of a certain number of simpler reflexes.

THE PROBLEM OF MIND AND BODY

This is based on the system of the spinal cord, for it consists of a number of arcs so intimately connected that, when the sensory limb of any one of them is stimulated, the impulse spreads to all the members of the system and excites a group of muscles whose contractions produce an orderly movement of some part or parts of the body, or as it is technically called a co-ordinated movement. In this way, we see how it comes about that in the spinal system, when the environment affects some organ, movements in the muscles are at once appropriately produced for the purpose of action or inhibition.

To prove that the spinal cord is able to act as an independent organ, let us look at a purely reflex action in the case of an animal, whose spinal nervous system remains intact after its brain has been removed. For instance, a frog, whose brain has been destroyed, may be induced to perform several kinds of reflex action by the application of stimuli. It cannot, however, initiate any such action. This shows us that purely reflex actions have a machine-like fatality, though they are admirably adapted to certain purposes. However, in consequence of the lack of ability to initiate action, the question arises, whether such reflex action is accompanied by consciousness. This is a question which is closely connected with the relation between mind and body, and so we leave it to be discussed later.

The Brain. — This is that part of the central nervous system which is contained in the cranium

EMPIRICAL DATA

or skull. Though it can be divided into the great brain (cerebrum), the hinder or little brain (cerebellum) and the medulla oblongata (the transitional part between the spinal cord and the other two parts viz., cerebrum and cerebellum), yet we must remember that the place where the connection between the physical and psychical processes can be found is confined to the great brain i. e. the cerebrum. The cerebrum consists of no more than the two convoluted ovoid masses, called the 'cerebral hemispheres'. It is made up of grey and white matter. The white matter consists solely of nerve-fibres or nerve-processes. The grey matter consists of a vast number of nerve-processes and cell-bodies which are said to be three thousand million in number. Each of them is regarded as part of the brain and is connected with other neurones as well as with all the organs of the body. Thus, it is the cerebrum which discharges the highest central office of the body and all the lower nervous centres are under its control. This can be well shown by the power exercised in controlling, to a greater or less degree, the pure reflexes enacted by the spinal system. For these reflexes, as we have already seen, have the feature of fatality i. e. whenever a certain stimulus is given, a certain reaction always follows; thus a certain group of muscles is invariably brought into action in a certain way. Therefore it is under the control of the highest nervous organ i. e. the cerebrum, that these reflexes can be properly adjusted, so that our motor acts can

THE PROBLEM OF MIND AND BODY

be suitably adapted to the constantly changing environment. This being so, it will be seen that the cerebrum has not only a positive part to play in controlling the lower nervous centres, but a negative part as well. Many activities of the lower nervous centres need to be suppressed or inhibited by the central office quite as much as others need to be initiated or adjusted by it.

Again, the cerebrum, especially the grey matter of the cortex appears to be the seat of our consciousness. All the psychical processes such as sensation, perception, memory, imagination, thought, etc. take place in connection with the cortex; so that our "intellection" depends entirely upon the development of the brain. This statement can be proved by the following facts: —

(1) The larger the cerebrum is in proportion to the rest of the brain, the more highly developed is its conscious life. So the cerebrum of a human being, whose conscious life is most intelligent, occupies far more room than that of animals in the brain.

(2) The convolutions in the brain of a human being are more complex than those of animals; and again, those races of human beings which are the most intelligent, have the most fully developed convolutions. This shows that the variety of convolutions in the brain bears a close relationship to the development of conscious life.

(3) No sooner has the cerebrum of a human being been destroyed or severely injured than his

EMPIRICAL DATA

conscious life disappears. The injury to a limb or a sense-organ, however, does not affect the conscious life in the same direct and complete fashion.

(4) Many cases of mental pathology appear to be due to brain diseases. On the other hand, imperfect development of the cerebrum in man is always accompanied by some abnormal state of mind, such as idiocy.

(5) The recent successful investigations into the localization of cerebral function leads to the conclusion that certain areas of the brain are concerned with certain mental functions. This will be described in detail in the following chapter.

From the above-mentioned points of view, we should regard the cerebrum and especially the cerebral cortex, as the only nervous organ concerned with our mental life. It is entirely due to its development that man has made himself the most powerful animal on earth. The mental life connected with the cerebrum has developed in him into an intelligent and rational life which is vastly superior to the life of other animals. He can shape his behaviour from the memory of his past, as well as from the forecast of his future, in such a suitable way as to meet the changes in his environment. Therefore, it is the brain of the whole nervous system which has an intimate relation with the psychical life.

Let us now pass to the psychical processes of our mental life. Psychical processes are gene-

THE PROBLEM OF MIND AND BODY

rally expressed by the word 'consciousness'. Consciousness is difficult to define, as it cannot be analysed into anything clearer and simpler. Perhaps it may be defined as 'the various manifestations (cognition, feeling and conation) of mental life', which range and develop from the simplest processes to the most highly complex. The processes of the higher level are such as to control and unify the processes of the lower level, though the latter can exist and perform its functions independently of the former. Two important points in consciousness of which we should take note are: — its intensity and its qualitative characteristics.

(1) The degree of intensity of consciousness.

Consciousness varies in its intensity and often passes from the lower and obscurer degrees to the higher and clearer, and *vice versa*. In this way a presentation or an idea which has occupied the centre of consciousness, may be transmitted to the marginal field, from which it might pass again into the focus. Both the focus and the margin together constitute the field of consciousness.

There is also another degree of consciousness in which a certain mental process exists, though it is not intense enough to become the object of our attention. Such a process is called 'subconscious'. We cannot, however, attend to such a process, unless it passes above the threshold.

(2) The qualitative characteristics of consciousness.

EMPIRICAL DATA

(a) The continuity of consciousness. — In order to explain this, we may quote Prof. Ward's description. "At any given moment, we have a field of consciousness psychologically one and continuous; at the next, we have not a new field, but a partial change within the same field". This shows that however different and changeable the content of our psychical life may be, its process is, as a rule, unbroken. In other words, conscious processes always take place in the form of a flowing series, notwithstanding their being varied in fullness. Therefore, they may be metaphorically compared with the continuous flowing of a river, which may vary in its depth and breadth, but is ever the same river. For this reason, it is usual to speak of the stream of consciousness. The continuity of consciousness is due to the fact that no experience of our mental life remains independent and isolated, for every experience in our mental life leaves behind it a disposition which determines other psychical processes in the future. Therefore, we know that the stream of consciousness continues, not only for a particular time, but through the whole of our psychical life.

Moreover, the continuity of consciousness is mainly constituted by so-called 'interest-processes'. In every interest-process there is an end to be attained, and this process will not cease until its end has been attained. Some of our interest-processes cannot succeed, before a long period of experience has elapsed, while some of them may last as long as we live without their being accom-

THE PROBLEM OF MIND AND BODY

plished. The interest-process, then, may be said to be a special feature of the continuity of our mental life.

(b) Variations in the content of consciousness. — For consciousness to exist at all, we must have constant changes in its content. The more unchanged our impressions or ideas, the more nearly our conscious states pass into unconscious states. Hypnotism is based on the fact that when one's attention is occupied by completely uniform and unchanging impressions, there will be a tendency for the conscious process to cease, and there will then follow a tendency to sleep.

Since the process of our mental life is continuous, on the one hand, and changeable, on the other, no one mental state can occur without its having an effect on others. It is here that the law of relativity applies, which asserts that every conscious process is partly determined by a previous psychical process. Prof. Höffding expresses the law of relativity in the following terms, "From the moment of its coming into being, the existence and properties of a sensation are determined by its relation to other sensations". For instance, the silence of the country impresses us more when we have just come out of the noise of the city. The weather outside seems colder when we come out of a warm room. Again, it is maintained that this law can be applied to all ideas and thoughts, as well as to feeling and volition. However, though the psychical processes are all alike so changeable in their nature, there is another

fundamental characteristic of all consciousness, namely, synthesis. This leads us to the third main feature of conscious process.

(c) The unity of consciousness — Every psychical process belongs to consciousness only through its union with other processes. Some psychologists conceive of consciousness as a mere succession of ideas without inner connection. This may be true to some extent, in the case of abnormal states of mind. But, applied to normal life, the assertion certainly seems to be contrary to the obvious fact that each mental process is related to some other mental process. Moreover, all mental processes come into the series of presentations which are recognised as belonging to one and the same subject, namely; the so-called "Ego". As Prof. Ward says, "Everything mental is referred to a self". Therefore, every mental process implies a cognitive or knowing subject as well as an object of cognition. It is by virtue of a "knowing" subject that there is an inner connection between the various mental processes under the form of synthesis. All things, which are experienced at different times and in various places, can be united together by the knowing subject, and in this way the unity of consciousness is built up. What we should remember here is that such "unity" or "synthesis" is of so fundamental and ultimate a nature, that it can hardly be explained in terms of any other kind of experience; in other words, "to consciousness nothing can be so intelligent as consciousness".

CHAPTER II.

CORRESPONDENCE BETWEEN THE NERVOUS SYSTEM AND MENTAL LIFE.

If we compare the physiological processes of the nervous system with the psychical processes of mental life, we find that in some respects the one system closely corresponds to the other. Such a correspondence can be regarded as a clue to the connection between the mental and the physical. This correspondence may be shown as follows: —

(1) The development of an individual's conscious life at various stages corresponds to the development of the nervous system. The more developed and complex our nervous system is, the richer and fuller is the content of our conscious life. Therefore, the conscious life in old age or in childhood is quite different from that in a fully developed adult. The special feature in the conscious life of an old man is forgetfulness. Yesterday's events may not be capable of recall to-day, and to-day's events may be totally forgotten to-morrow. Moreover, an old man cannot think deeply. He is in this respect like a child. The reason for all this is that the nervous tissues

EMPIRICAL DATA

become less plastic and consequently are not so easily modifiable as they were before.

(2) There are different levels, "higher and lower" in the nervous system, and the development is from the simplest form to the most complex. There are, in like manner, different levels of conscious life. The simplest mode of consciousness i. e. simple sensation, resists analysis. Its most complex aspect consists of deep thought, volitional fiat, etc. Again, we have seen that the conscious process at a higher level is such as to control and unify the process at the lower level, though the latter may be able to perform its functions independently of the former. So we find in the nervous system that the subordinate nerve centres are controlled and co-ordinated by the principal nerve centres; still the former is an organ which can fulfil its functions by itself.

(3) The whole nervous system is an organisation for self-preservation. Its main function consists in integration, that is in its serving as the central system connecting the various parts of the organism, controlling and adjusting their activities into inner harmony and thus preserving the bodily self. The same function, we find, is fulfilled in subject, combining the various experiences different in time and place, in order that they may belong to one and the same conscious life, in which there is a knowing belong to one and the same psychical unity, through which our "spiritual or pure Ego" is realised. Hence the need of the unity of our psychical life for realising the pure Ego is just

THE PROBLEM OF MIND AND BODY

as great as the need for the unity of our bodily organism in order to preserve the bodily or material self.

(4) By virtue of the highly complex organization of the nervous system and the ramified relations between the various nerve centres, even a slight excitation of the nerves may give rise to a series of processes throughout the whole nervous system. This series of processes may become so complex and ramified that it has to be interfered with and controlled by the higher nervous system. This corresponds with the fact that, on the mental side, a simple sensation set up by an external stimulus, may call up a series of other associated sensations and ideas, and may finally result in our devoting attention to one of these ideas, which is singled out by the knowing subject.

(5) We have seen that the content of our conscious life is always changing: so is the process of the nervous system, for what goes on within the nervous system is essentially a change of state. The modes of such change consist of stimulations, liberations of energy, impulses, which take place in the nerve-centres and nerve-fibres, and are related with one another. The changes of conscious life consist of sensations, ideas, imagination, associations, etc. which succeed in turn during the mental process and are always affected by each other. Moreover, the changes in the nervous system may be greater or smaller in extent, and more or less in their disturbance. This may be compared with the fact

EMPIRICAL DATA

that the field of consciousness may be greater or smaller, and its intensity more or less in degree.

(6) Again, we have seen that however changeable the content of our mental life may be, its process is, nevertheless, one and continuous. In a similar way, all the nervous processes within the nervous system are one and continuous — based upon the reflex type of all nervous process, as we have described before. In the mental life, we do not find any series of psychical events coming to an end without further psychical effects, or coming into existence without psychical antecedents. The same is true of any train of physical processes in the nervous system. This is why a psychical or a physical effect within each sphere is never determined by a single cause, but by a combination of causes, either psychical or physical.

The above comparison only shows the correspondence between the nervous and the mental process in general. There are other points of view from which we can see that the mental process correlates with the nervous process in detail. The specific energies of sensory nerves and the localisation of cerebral function are prominent instances which support this view.

(1) The principle of the so-called specific energies of sensory nerves is based upon the fact that some sensations can be analysed into a number of different elements, which arise from the different sensory nerves excited by external stimuli, while other sensations whose ele-

THE PROBLEM OF MIND AND BODY

ments cannot be discovered are excited only by stimuli acting upon a single sensory neurone. The analysable sensory complex is called a "fusion". Moreover, the question whether the sensation can be analysed or not, depends not only upon whether one or more sensory neurones is excited by the stimulus, but also whether only one and the same quality of sensation is produced by the stimulation of a certain sensory nerve-fibre or neurone, no matter how various and different may be the nature of its stimulation. Therefore, the quality of sensation is determined not by the nature of the external stimulus, but by the nature of the nerve-fibres which are excited by that stimulus. This statement can be proved by the following facts. "It has been found possible to excite a sense-organ by stimuli other than its adequate stimuli, i. e. the kind of stimuli which normally excite it, and for the reception of which it is specially adapted. In every case in which it has been possible to stimulate any sensory nerve or sense-organ in this way, it has been found that the resulting sensation is of the quality which normally results from the stimulation of that nerve or sense-organ by its adequate stimulus". An obvious instance is found in the case where there is only one kind of sensation produced by varied stimulation — each of the four kinds of sensory spots in the skin, no matter what may be the character of the stimulus, produces only one sensation. However, if this doctrine is true, we must remember that the excitements in nerves caused

EMPIRICAL DATA

by external stimuli are the same and not specific; it is only through the activity of the sensory areas of the cortex that the specific quality arises.

(2) The localization of cerebral function — In recent years efforts have been made to localize mental function in the brain. The areas of the brain concerned with various movements and sensations have been mapped out. This theory is based on the discovery that in so far as any specific sensory or motor areas are intact, the corresponding sensations or movements can be experienced or performed. If, however, any one of the sensory or motor areas is destroyed by disease or injury, its corresponding sensation or movement will not be experienced or performed again. The best illustration of this is afforded by those pathological cases, which are called "aphasia". According to the way in which the sensory and motor areas have been mapped out in the brain, a case of aphasia is discovered to be either sensory aphasia or motor aphasia. In the former case, persons who suffer from aphasia may be either unable to recognise spoken words, though they can hear them distinctly — this is "Auditory Aphasia" — or unable to recognise the written words, though they can see them quite clearly — "Visual Aphasia". In the latter case, persons suffering from aphasia may not be able either to use words correctly, though they can produce their sounds — "Vocal Aphasia" — or to write words, though they can speak them — "Graphic Aphasia". Every case of aphasia is due to the destruction of

THE PROBLEM OF MIND AND BODY

certain areas in the brain, whose mental function is either auditory, visual, vocal, or graphic. Perhaps what modern psychologists should be satisfied with, in regard to the fundamental connection between mind and body, is the definite assigning of certain kinds of psychical process to certain local parts of the brain.

CHAPTER III.

VARIOUS RELATIONS BETWEEN MIND AND BODY REVEALED BY ORDINARY EXPERIENCE.

Having examined the parallel lines along which mental processes correlate with nervous processes, we must assume, as a matter of fact, an intimate connection between mind and body. The ordinarily experienced facts from which the relation of mind and body can be observed and investigated may be roughly classified into four kinds;

- (1) The so-called purely physical process.
- (2) The process from physical to psychical.
- (3) The so-called purely psychical process.
- (4) The process from psychical to physical.

In the second and last cases, it is apparent that one is the action of the body on mind, and the other is the action of the mind on body. In the first and third cases, there is much discussion as to whether it is or is not the case, that the former is accompanied by conscious process and the latter accompanied by nervous process. Though I say "purely physical" and "purely psychical", perhaps it would be better to say "process seemingly purely physical" and "process seemingly purely psychical".

THE PROBLEM OF MIND AND BODY

(1) *Process seemingly purely physical.*

This kind of process consists mainly of reflex action, whose operative organ, as we have already seen, is the spinal cord. The special features in reflex action are: (a) the fixed and uniform way in which it responds to the external stimulus. (b) Its lack of the power of learning by experience. It is on account of these features that reflex action, which is rather physical and mechanical in nature, is far from being sufficient to maintain a life in which varied action of adaptation to varied circumstances is required, for such adaptation is always performed by intelligence, which is closely connected with the brain, as we have described above. Such reflex actions are the movement of breathing, the heart-beat, the movement of the limbs during sleep, etc. None of these is supposed to be necessarily accompanied by consciousness. Is this assertion correct? To answer the question, we had better state Dr. McDougall's view, and discuss it.

According to Dr. McDougall, "reflex processes of the spinal cord in man and the higher animals do not affect consciousness, though it must be admitted that this cannot be maintained with equal confidence in respect to the processes of the cord in frogs and other such lowly vertebrates". The evidence on which Dr. McDougall's view is based, is that whenever the fluctuating adaptation to varying conditions appears in any action, consciousness accompanies it. As to reflex actions of the spinal cord in man, we find

EMPIRICAL DATA

that there is no such adaptation to varying circumstances in them; therefore, we should conclude that they are not accompanied by consciousness.

Still there are other writers who hold that there is some obscure and implicit kind of psychical process accompanying reflex actions. For example, Prof. Stout thinks that the lack of the power of learning by experience in reflex action does not necessarily imply the absence of all consciousness in the widest sense of the word.

In dealing with the above question, we have to note, firstly, that to say "something affects consciousness" is rather different from saying that "something is merely accompanied by consciousness"; for in the former case, the content of consciousness is affected and changed by the "something", though not, however, in the latter case; secondly, that the word consciousness may be used either in its wider or narrow sense; consciousness, however, is equal to intelligence only in its narrow sense. I agree with Dr. McDougall when he says that the reflex processes of the spinal cord in man do not affect consciousness; for such reflex processes may not affect the content of consciousness in the narrower sense. Yet it can hardly be denied that they may be accompanied by consciousness in general. The content of the conscious life may apparently remain unchanged, whenever such reflex processes appear, though in the meantime they do come into the field of consciousness, but do not attain to such a degree of consciousness as to make us aware of them. The

THE PROBLEM OF MIND AND BODY

adaptation of any action to varying conditions belongs to intelligent process; but intelligence is only identified with consciousness in its narrow sense, as we have said; therefore, the lack of adaptation to varying circumstances in reflex processes can only prove that they are not accompanied by intelligence but do not necessarily imply that they are not accompanied by consciousness in its wider sense.

Moreover, I agree with Dr. McDougall in the view that reflex processes in man cannot be regarded as quite the same as those in frogs and other such lower vertebrates. For instance, a decerebrate frog can perform nearly all kinds of reflex action in response to external stimuli. This is absolutely impossible in the case of human beings, for no sooner has the brain of a human being been removed than nearly all kinds of reflex actions practically stop. This is because the nerve-centres in the lower animals are rather independent of each other. The destruction of the brain, then, may not affect the function of the spinal cord. But in the case of human beings, all the nerve-centres are closely connected. The brain constitutes a principal and central system, which is connected with all parts of the organism. Therefore, as soon as the brain has been destroyed, all the processes in every part of the organism cease.

On the other hand, in so far as the higher nervous system exists, there is always consciousness in general accompanying it, to which the so-

EMPIRICAL DATA

called common sensibility corresponds. Such consciousness in general is not confined to the process of the brain, but is correlated with the entirety of the processes within the organism. Thus we may say that every kind of process within the organism — reflex process included — enters into one's consciousness in general. This is not because consciousness is needed to play an important part in the production of these reflex processes, but because these reflex processes take place in the organism of human beings whose life is always conscious. It is in this way that the reflex processes in human beings are different from those of frogs and other such lower vertebrates; and again, this is why it seems that all the processes within the organism of human beings are more or less conscious in nature.

(2) *Process from physical to psychical.*

This kind of relation is obviously shown in actions of the body upon the mind. There are various circumstances in which the body acts upon the mind, i. e. in which a physical change is followed by a mental change. The most prominent is the case of sensation, which arises from a stimulus conveyed to the brain through the afferent nerves from the peripheral parts of the body. This is a case of mental change excited by external physical influence. On the other hand, there are some mental changes which arise through internal physical influence, i. e. through the blood circulation, brain excitation, visceral processes, etc. The

THE PROBLEM OF MIND AND BODY

feeling of hunger, for instance, comes from the need of blood supply in the stomach, necessary for the nourishment of the nerves. A kind of mental disturbance may be effected by headache, owing to excessive excitation of the brain substance. Persons in good health always have high spirits, and are happy in mind; those in ill-health seem unhappy or depressed in spirits.

In the cases above mentioned, the physical influence only affects the content of the mental process, but, as a rule, does not affect the degrees of intensity of consciousness. There are other cases in which the mental process is not only affected in its content by physical influence, but also in its degree of intensity. Last of all consciousness may disappear altogether as a result of physical influence.

Such alteration of the degree of consciousness can be observed either on the negative or on the positive side. On the negative side, for example, when we stay in an extremely quiet place or in a dark room, a certain physical effect is produced by the quietness or the darkness. Such physical effect sometimes not only causes the content of consciousness to be changed, but also causes an alteration of the degree of its intensity as well. We may simply have organic sensations, while our consciousness is otherwise rather empty in content. Again we may thus be induced to sleep. This is the condition of which a hypnotist makes use.

EMPIRICAL DATA

On the positive side, a knock or a blow on the head, for example, may cause a great change in the degree of consciousness, and sometimes be so severe that unconsciousness may follow. The same result may follow from the taking of intoxicants, opium, ether, chloroform, etc. However, if any one of these things is taken in a moderate amount, only a slight modification of consciousness follows. The more the stimulant taken, the more the intensity of consciousness is affected, and the effect may at last result in drunken stupor, or anaesthesia. From these facts we should think that the relation between mind and body is not only apparent in that the mind is acted upon by the body, but is dependent on the body in some way.

(3) *Process seemingly purely psychical.*

Some writers hold that the higher mental states are without physical correlates. Such states are pure thought, non-sensational pleasure and pain, volitional attention, etc. All these are supposed to be subjective phenomena, emanating from the pure Ego. Is it possible that such mental states exist without their corresponding physical correlates? This is answered in the affirmative by certain interactionists. Since the development of the study of physiological psychology in recent years, however, there has been a strong tendency among authors to regard the connection of mind and body as so intimate that the physical events must be held to affect our entire mental life. To discuss the question at

THE PROBLEM OF MIND AND BODY

issue, we should consider, firstly, how mental states are conditioned by physical processes negatively, and secondly, how the higher mental states affect the physical processes positively.

From the negative side, we should notice that such higher mental states cannot take place or proceed satisfactorily without certain physical conditions. Owing to fatigue, the mental state may be so dull that we cannot devote our thought or attention to any object, nor can we have any kind of pleasure through it. The same result may happen, owing to the ill-health of the organism. If it were true that the higher mental states are without physical correlates, such physical states as fatigue, ill-health, etc. would not affect those mental states at all. Does not this prove that such higher mental states cannot exist without their physical correlates?

From the positive side, it should be noticed that some physical changes take place in consequence of certain higher mental processes. If there were no physical processes correlated with the higher mental states, then the physical states would remain quite the same, no matter how the higher mental processes proceed. A long period of deep thought causes one to feel headache. Great exertion during deliberation sometimes makes one feel dizzy. These facts seem to show that an equilibrium exists between the mental and the physical sides in the higher mental states, so that whenever one side shows an exaggeration of function, the other is affected by it.

EMPIRICAL DATA

Again, one more fact we should notice here, is that physical processes in the organism consist of both brain processes and bodily activity as a whole. We may ask, does the physical correlate of the higher mental states consist of the brain process only or of bodily activity as well? For without bodily activity the brain process is impossible. We should prefer to say that such physical correlates consist of both brain and bodily processes. In agreement with the fact that all the intelligent processes are immediately connected with the brain processes, the higher mental states seem to be correlated with the brain processes directly, and the bodily processes indirectly.

In any case, there seems no doubt that all mental processes, without exception, are conditioned by or correlated with physical processes, either directly or indirectly, and such processes all imply psycho-physical correlation. Hence every mental process — either lower or higher — may be regarded as a “psycho-physical process”.

(4) *Process from psychical to physical*

“All consciousness” says James, “is motor”, for all internal processes must finally result in some form of bodily activity due to the escape of the central excitement through efferent nerves. If this statement is true, mental process is always followed by bodily change. Let us now consider those cases in which mental process is followed by physical process.

THE PROBLEM OF MIND AND BODY

There is no clearer and more explicit example of the process from mental to physical than the case of volition. When I will to move my hand, the movement follows, and if I will to take a walk, the appropriate bodily movements follow. Thus, the will — the psychical — seems to be the cause and the movement — the physical — the effect or consequence of it.

This holds true, not only of volition, but of the processes of emotion and cognition. We can find no case of emotion which is not followed by a physical change in the body. For instance, when one feels angry, one's colour and manner change, one's heart beats quicker and more violently, and the breathing is hurried. Another marked physical symptom is the excitation of the muscles all over the body. In the same way, there are various bodily symptoms accompanying the emotions of fear, grief, joy, etc. etc. Different kinds of emotion are followed by different physical changes. How different are a man's bodily symptoms when he is joyful, from his symptoms when he is weighed down by sorrow. In like manner, the bodily processes of a man in anger are different from those of a person in fear. On the cognitive side, the emergence of an idea of a ghost in the mind causes one to feel frightened, and seeing or thinking of another's misery makes one feel miserable oneself. It is because of these facts that recent psychologists maintain that all mental states are accompanied by bodily processes in one way or another.

EMPIRICAL DATA

Moreover, when a person becomes insane, owing to some great mental trouble, abnormal physiological developments take place. One's action is in this case so mechanical that the bodily processes can no longer be properly maintained, and perhaps such a one could not even protect his body from danger. In this way, we see that psychical influence may affect the health and survival of the body, just as much as bodily influences may abolish consciousness altogether. The body, therefore, needs a normal mental state for its maintenance, just as much as the mind needs a sound body for its operation.

CHAPTER IV.

SUMMARY VIEW OF THE VARIOUS RELATIONS BETWEEN MIND AND BODY FROM DIFFERENT STANDPOINTS.

Having stated and discussed the various experienced facts mentioned above in connection with the relation of mind and body, we should remember that one and the same experienced fact may be interpreted in different ways. The difference between automatism, interactionism and parallelism really lies in the different interpretations placed upon the same experienced facts. In consequence of these different interpretations, the relation between mind and body may be viewed from different standpoints.

According to automatism, it is quite natural that there should be purely physical processes (reflex actions) unaccompanied by consciousness, as well as psychical processes produced by the physical, for this theory holds that while certain physical changes are followed by their correlative states of consciousness, consciousness does not influence at all the physical state in return. It seems impossible, then, according to the automatist, to have either a physical process

EMPIRICAL DATA

caused by a mental, or a mental state independent of its physical correlate.

Parallelism, on the other hand, asserts that mental and physical processes are always concomitant with one another. In so far as there is a nervous process, there must be a mental process correlated with it, and *vice versa*. Therefore, according to this theory, in the case of reflex action, as in the case of a higher mental process, there is always a corresponding and correlated process of the psychical or of the physical respectively. On the other hand, not only the process from the physical to the psychical such as in sensation, but also the process from the psychical to the physical as in volition, is denied by the parallelist. In the former case, he assumes that the process of sensation takes place at the same time as the sensory nerve-current arises, and thus the one is merely accompanied by the other. In the latter case, he thinks that there is a volitional brain process occurring at the same time as volition takes place, and it is not the latter but the former which causes the bodily movement.

The facts that we usually experience as the effect of a physical state upon the mind, and the action of a psychical state upon the body, certainly seem to be quite consistent with the theory of interactionism. Moreover, according to the interpretation offered by this theory of mind and body as two distinct and independent things, it is quite possible that a physical process (reflex action) may

THE PROBLEM OF MIND AND BODY

take place without being accompanied by consciousness, or a psychical process (higher mental state) may exist without its physical correlate. We must, however, admit that the supposition of two such kinds of processes is quite open to question from the purely empirical point of view.

On the whole, however, we should say that the theory of automatism is specially supported by the ordinary view that the mind is not only acted upon by, but is dependent on the body. Most of the ordinarily experienced facts regarding the connection between mind and body, seem to be strongly in favour of the theory of interactionism, and on the contrary, are not compatible with the view held by the parallelist. This being so, should we then, reject parallelism on account of its inconsistency with many of the facts of ordinary experience? No, for if we examine the facts which parallelists assume, and the ways in which they interpret them, — most of their interpretations are based on certain scientific principles — we are tempted to think that parallelism is equally as acceptable as the other two. Besides, the fact that there is a close correspondence between the nervous system and conscious life not only in general, but in detail, and again the fact that all mental process implies a psycho-physical correlation, do carry great weight in favour of this theory. On the other hand, even though interactionism seems to be the only theory which is compatible with most of the usual empirical facts, we may yet be

EMPIRICAL DATA

unable to establish it from the scientific or metaphysical point of view. Therefore, we must now enter into the theoretical sphere, and discuss the various doctrines already mentioned from a theoretical point of view.

PART II.

THEORETICAL PRINCIPLES

CHAPTER V.

STATEMENT OF THE PRINCIPAL THEORIES.

Having collected empirical data from the various facts ordinarily experienced in connection with the bodily processes, on the one hand, and the psychical states on the other, we now proceed to take into consideration the principal theories concerning the relationship between mind and body, viz., automatism, parallelism, and interactionism. Each of these theories seeks to establish its principles with a view to bringing the different aspects of the relation between mind and body under one and the same law. Each of them, however, has its own strength and its own weakness. We can hardly arrive at a decision until we have thoroughly investigated the points in which their weakness lies, as well as the points from which their strength is derived. Perhaps it is well to say that in the light of present knowledge, we are not as yet able to arrive at a perfectly satisfactory

THE PROBLEM OF MIND AND BODY

understanding of the relation between mind and body. However, we can consider as well as we may, the theories in question from the standpoint of empirical and scientific knowledge and philosophical or metaphysical principles. Before dealing with these three theories separately, it is first desirable to give a precise definition of each of them.

Automatism.

This theory is held by many authorities in physical science. Huxley is the great upholder of automatism, and was the first to assert that the process of consciousness should be regarded as a so-called "Epiphenomenon" of the brain process. It follows from this assertion, that it is the brain process which "causes", "generates", or "calls into existence" the stream of consciousness, and that consciousness is only an "effect", "consequence", or "function" of the neural changes in the brain. Moreover, it implies that neither the physical process in the organism, nor the mental process, can be produced or caused by consciousness. Automatism then asserts: —

- (1) The primacy and efficiency of the brain (i. e. matter).
- (2) The dependence and inefficiency of consciousness.

According to this theory, all physical events can be wholly determined by their physical antecedents, and certain physical changes in the brain are followed or accompanied by certain

THEORETICAL PRINCIPLES

psychical processes, so that there is no such thing as real psychical activity at all. It is a mere consequence of certain physical processes, i. e. it is epiphenomenal; it neither acts upon the bodily processes in return, nor has anything to do with any further psychical processes. All these statements are based on the assumption that the material system, i. e. matter and energy, is the real and effective agency for the production of all kinds of processes and their changes, no matter whether they are physical or mental.

Interactionism.

This is a theory based on common experience. It conceives of mind and body as two different and distinct things which react upon one another. Sensation, e. g., is usually regarded as a mental state which follows from its immediate physical antecedents, while in volition, muscular movements follow from their immediate psychical antecedents. The former process is just the reverse of the latter; both of them are assumed to have equal value and efficiency. Interactionism, then, claims: —

- (1) The co-equal reality of mind and body.
- (2) The mutual interaction of one on the other.

In view of the above mentioned points, interactionism is found to be partly in agreement with parallelism in asserting that mind and matter may be regarded as two independent and distinct worlds, and to be partly in agreement with automa-

THE PROBLEM OF MIND AND BODY

tism in affirming that the physical processes cause the psychical. Interactionism, therefore, is a theory which can be reconciled with both parallelism and automatism in some ways. Interactionism is, of course, primarily based on common experience, but at the same time, it can also be viewed and appreciated from the philosophical standpoint.

Parallelism.

The parallelist, with a view to avoiding the difficulties of automatism and interactionism, sets forth a doctrine which denies, on the one hand, that psychical processes are only secondary effects of physical processes, and on the other, that the physical and the mental processes interact upon one another. The parallelist has noticed that psychical activity plays such an important part in human life, that it is difficult for him to accept a mechanical explanation of consciousness such as is held by the automatist. To overcome the difficulty, he maintains that consciousness is an active factor in mental life, just as matter and energy are in the physical world. Again, he compares the phenomena of mind and body, and notices that their natures are so completely unlike one another, that we may never be able to understand how the one produces the other. To obtain a better explanation, he is forced to believe that the series of psychical and physical events run strictly parallel, but never meet. Thus, parallelism asserts: —

- (1) The independence of, but correspondence between mind and body, and

THEORETICAL PRINCIPLES

- (2) The absence of causal relation between them.

According to this theory, a psychical state can never be caused by a physical, nor a physical process caused by a psychical one. Each series has its precise and minute correspondence in the other. The stream of conscious life forms its own system of causal relations, but is at the same time independent of any physical correspondence, while the series of physical events forms a similar system connecting the physical processes. Moreover, the correspondence between mind and body is not only general, but also particular, for the whole system of brain processes is necessary to the existence of the whole system of conscious life, just as much as a particular brain process is necessary to a particular psychical state. In a word, neither a psychical state nor a physical process can exist without its correlate, i. e. there is a relation of concomitance.

The parallelist is not content with describing the facts above mentioned. He also tries to find shelter under the wing of metaphysics. Mind and body are regarded by him, from a metaphysical standard, as two different aspects or manifestations of one and the same reality. The question whether such an explanation is satisfactory or not in the light of metaphysics, cannot, of course, be discussed until we reach the special chapter dealing with parallelism.

CHAPTER VI.

FUNDAMENTAL QUESTIONS CONCERNING THE RELATIONSHIP BETWEEN MIND AND BODY.

Although we have now defined the three principal theories, i. e. automatism, interactionism and parallelism, it is desirable to take a clearer view of certain fundamental questions which are closely connected with the relationship between mind and body before going into a full discussion of these separate theories. The questions we are about to consider are: —

- (1) *The temporal relation.*
- (2) *The causal relation.*
- (3) *The efficiency of consciousness.*

(1) *The problem of temporal relation.*

The question of temporal relation is one which inquires whether the relation between the brain process and the accompanying mental state is successive or simultaneous. If we hold that a psychical state produces a physical one and *vice versa*, then, the temporal relation between these two must be a successive one. A sensory brain process must be prior to a sensation, and likewise a volition prior to a motor discharge. The interactionist holds this view. The automatist agrees

THEORETICAL PRINCIPLES

with the view that the occurrence of brain process and mental state is successive, but he maintains that such a temporal relation as the successive is in one direction only, i. e. the physical process is prior to the psychical state in all changes and processes.

The parallelist, as we have seen, asserts, on the one hand, that the brain process and the mental state run parallel, but denies, on the other hand, that there is any causal relation between them. Thus he seems to take the view that their temporal relation is simultaneous. When a physical process takes place in the brain, there is a psychical process correlated with it at the same time, and *vice versa*. Moreover, if the one process continues for a certain length of time or stops in a moment, so does the other; that is, if you have the one, you have the other, if you omit the one, you omit the other. Therefore, in the theory of parallelism, perhaps the word "concomitance" rather than "correspondence" seems the appropriate term for such a temporal relation.

(2) *The problem of causal relation.*

The question of temporal relation is connected with that of causal relation between mind and body. However, the latter seems to be a more complicated question than the former.

The question of causal relation may be divided into two parts: (1) Is there any causal relation between mind and body? (2) If there is, in what order are they found? With regard to the first,

THE PROBLEM OF MIND AND BODY

we have seen that the parallelist answers in the negative, while both the interactionist and the automatist affirm it. As to the second, the interactionist thinks that both the bodily and the mental processes are caused and effected interchangeably, while the automatist asserts that only the physical process can be the cause. If we wish further to discuss the question at issue, we must first clearly understand the conception of "causation".

The essential thing in determining a causal relation is to point to a necessary connection between two events, i. e. how they belong to one and the same continuous process. It is on the conception of causation that our systematic knowledge in science is based. According to the principle of causality, we know that the phenomenon A is connected with the phenomenon B as cause and effect, because we know that whenever A takes place, B must always follow or accompany it, and a change in A must always be followed or accompanied by a corresponding change in B. Is it not a matter of fact that when a certain mental process takes place, a certain bodily process immediately follows and *vice versa*? Is it not also true that every change in the mental process is always accompanied by a corresponding change in the physical process and *vice versa*? If this is so, how can we help thinking that there is some causal relationship between them? Even if we assume that there is a causal relation between them, it is rather difficult

THEORETICAL PRINCIPLES

for us to say in what way the one can affect the other. This is especially due to the fact that all the physical processes in the nervous system are one and continuous, as we have already seen.

In studying the nervous system, we find no breach of physical continuity between the various nervous processes. Since the physical processes in the nervous system are in close continuity, we see that there is hardly any discoverable gap in the links of physical causation, which could be filled by a psychical link. It is on the basis of the physical continuity of the nervous system that the automatist regards the physical process as the only active agency by which consciousness can be produced, and the parallelist regards the physical universe as a continuous system which corresponds precisely to that system of psychical continuity.

Can we say then, that this fact of physical continuity in the nervous system disproves the theory of interactionism? It might disprove the rather old view, held by some interactionists, that the total causal sequence of a certain nervous process passes over into the psychical state entirely, and *vice versa*, and in consequence, leaves a gap for either a psychical factor or a physical one. But it does not necessarily prove that there is no possibility of interaction between mind and body at all; for in spite of the continuous physical processes in the nervous system, and the continuous psychical processes in the other, there is nothing we can see that would prevent the psychical processes from influencing or interfering with those physical pro-

THE PROBLEM OF MIND AND BODY

cesses which take place in the same organism as the former, and *vice versa*. However, this question is so complicated that we must leave it for the special chapter dealing with interactionism.

(3) *The efficiency of consciousness.*

One more question we must take into consideration at this point, namely, the efficiency of consciousness. This is closely related to the question of causal relation between mind and body, for if consciousness can be conceived of as being efficient, it would prove to be a "cause" or "productive agent" of some other process. The application of the term "epiphenomenon" to consciousness is due to the fact that the latter is held to be inefficient. Supposing the mind were a "mere epiphenomenon", the world would remain just the same as it is even if there were no such thing as consciousness. Thus, the mind would become a totally inert and useless thing in the physical universe.

But this is not the case. In reality, is it not because of the capacity of the mind that human beings seem to be the agents for reconstructing the physical universe? Is it not by virtue of the efficiency of consciousness that human beings become the only rational and moral beings on the earth? They can reflect on things or ideas; they can also initiate trains of thought about them. They can keep to certain ideas or motives and exclude all others by the power of will. Thus, they can invent something new in the physical universe

THEORETICAL PRINCIPLES

on the one hand, and select the best course of action on the other. All these things are due to the fact that the essence of human consciousness is rational and purposive. This being so, the mental processes in our psychical life cannot be regarded as changes, determined from without, i. e. by mechanism, but as changes in thought, feeling, will, etc., determined from within, i. e. for purposive ends, or ideals. It is owing to this that the terms "introspection", "philosophy", "morality", "virtue", "teleology", "ethics" and the rest have a meaning. This is why it seems impossible to interpret the efficiency of the mind entirely in terms of mechanical changes, although it may be possible to give an intelligent account of the physical universe in terms of consciousness.

Though the interactionist and the automatist both maintain that there is a causal relation between body and mind, yet the former recognises the efficiency of consciousness, while the latter denies it. Therefore, in the case of voluntary action, the former attributes the whole to volition, whilst the latter asserts that it is caused by a volitional brain event which even precedes the volition. The latter view which denies the efficiency of the will, seems to be based on the assumption that human action can be mechanically explained. If this were true, why should we not regard animals as "the conscious agents of things", and as "rational and moral beings", just as much as man? Thus, automatism not only makes consciousness inferior to matter, but makes

THE PROBLEM OF MIND AND BODY

the nature of consciousness altogether unintelligible.

The denial of the causal relation between mind and body does not necessarily involve the denial of the efficiency of consciousness; therefore, parallelism does not necessarily involve epiphenomenalism, for the former asserts only the parallelistic view of mind and body with a perfect correlation. Besides, in the sense of a perfect correlation, the efficiency of consciousness appears to be necessary to the fundamental conception of parallelism. Just as matter and energy are the active and essential factors in the physical universe, so consciousness, too, is comparatively active and essential in the mental world.

Moreover, not only do the attributes of the nervous processes correspond with those of the mental processes, but there is also a correspondence between their order and relation on both sides. For instance, if certain nervous processes are causally connected in a certain arrangement, their corresponding mental states must also be causally connected. How can such thoroughgoing correlation be obtained, if consciousness is regarded as inefficient? Then not only is parallelism far from denying the efficiency of consciousness, but the view of the activity of the mind itself appears to be derived from the very principle of parallelism.

CHAPTER VII.

THE THEORY OF AUTOMATISM.

Owing to the recent triumph of physical science, the principle of the conservation of energy is successfully established. Consequently, it is supposed, by some authors, to be a universal law of such authority that there should be nothing in the world to which it cannot be applied. Again, owing to the rapid progress of physiological science, the doctrine of the localization of cerebral functions has been satisfactorily proved, as we have already seen, and it is expected to be still further established in the future. Again, through the careful and minute investigations into the nature of so-called reflex-action, it has been shown that all nervous process is of a reflex nature, since the constitution of the nervous system is wholly based on a reflex plan, "involving always the transmission of the nervous impulse through systems of nerve-cells and nerve-fibres".

On the other hand, it was through the progress of both the physical and physiological sciences that the biological hypothesis of Darwin was promulgated, viz., the theory of the evolution of species. According to this hypothesis, the adaptation

THE PROBLEM OF MIND AND BODY

of structure and function in any species to environment has come about through the blind mechanical behaviour of natural selection. All animals, in this way, are regarded as having passed through the evolutionary process of natural selection, so that their growth and behaviour are capable of mechanical explanation. The same holds true of human beings. This evolutionary hypothesis has not only been applied to the sphere of living organisms, but is extended, by some authors, from living organisms to non-living beings. Such a view is strongly defended by Herbert Spencer. He thinks that the physical system had been in process for a considerably long time before the living organism was produced through a certain degree of complexity of molecular changes in the physical organization; and also that it took another considerably long time before consciousness was generated or produced through a certain degree of increasing complexity of the psychophysical changes in the structure of the brain of the living organism.

All the above-mentioned factors add strength and weight to the theory of automatism. It is from these that two propositions supporting this theory are drawn: —

(1) The whole system of the universe is entirely built up of matter and energy. There is no process in the universe which is not completely determined by its material antecedent in accordance with mechanical laws.

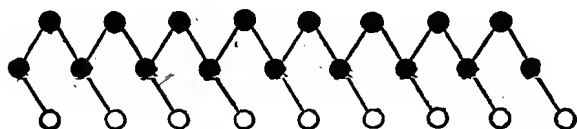
(2) As consciousness cannot be any more than a kind of process within this universe, so its

THEORETICAL PRINCIPLES

final explanation must be found in its physical antecedent. To think of the psychical process as active and efficient is illusory.

As a result of this theory, all those states we call psychical, such as perception, imagination, thought, emotion, volition, etc. are nothing more than so many series of elements of consciousness momentarily and successively produced by certain corresponding processes of the brain. Thus, automatism attributes all true activity and efficiency to the brain process, and consciousness, on the opposite side, is held to be something "epiphenomenal", without even reciprocal influence on the stream of consciousness itself. This is the reason why some automatists illustrate the relation of the stream of conscious elements to the brain process by the shadow of a machine or the sound of a clock-bell.

This theory of automatism may be represented by the following diagram: —



The black discs represent the brain process and are connected with one another by the causal chain, represented by the lines; the circles below represent the flow of the fragmentary conscious processes, which are caused by certain physical processes. On the whole, this diagram shows that the causal relation is confined to the

THE PROBLEM OF MIND AND BODY

brain processes and consciousness is a mere epiphenomenon.

Further to discuss the principle of automatism in detail, we cannot do better than first summarize the principal views of this theory, and then discuss them accordingly. The principal views, maintained by the automatist, may be summarily set forth as follows: —

I The automatist suggests that the stream of consciousness should be regarded as an epiphenomenon of the brain process, because mental processes, he thinks, "are simply the symbol in consciousness of the changes which take place automatically in the organism". This view presupposes that the ultimate reality is the physical universe, i. e. matter.

II He tells us that consciousness is a function of the brain just as much as breathing, etc. are the functions of their respective physiological organs.

III He maintains that sensation is the effect of physical changes, but does not admit that muscular changes are ever the effect of volition.

IV He, therefore, asserts that our voluntary actions are as purely mechanical as our reflex processes. Hence they are capable of a mechanical explanation.

I The first statement is mainly a question to be solved by metaphysics. We shall discuss it later. Let us begin our criticism with the other arguments above mentioned.

THEORETICAL PRINCIPLES

II Is consciousness a function of the brain? Before answering this, we must first answer the following question; Do we regard the process of consciousness as in nature the same as or different from those of the brain? If we regard the former as the same in nature as the latter, it is no wonder we think that consciousness is a function of the brain; for it may, in this way, be compared with digestion, a function of the stomach, or with movement, the function of the muscle. If we suppose, on the other hand, that the former differs in nature from the latter, it is very difficult for us to see why consciousness should be regarded as a function of the brain. Unless consciousness can be thought of as a kind of purely physiological process in the neurone, we can hardly suppose that it is merely a function of the brain. For it is obvious that the functions of other physiological organs are in themselves purely physical. Their nature is so like that of the organ itself that we can easily see the close relationship between them. But consciousness, on the contrary, is always supposed, either by the philosopher or the ordinary person, to be something different from the physical system — the brain.

Moreover, we should remember that the function of other physiological organs is mechanically performed by the organs themselves. For instance, in breathing, it is clear that the lung itself is engaged in performing its function. On the other hand, in psychical processes, it is not the brain, but the mind, that plays the all-important and active part. This may be exemplified

THE PROBLEM OF MIND AND BODY

clearly by the incorrect statement that "my brain, or even the nerve-cell in my brain feels, perceives, thinks, etc." instead of saying "it is my mind which feels, perceives, thinks, etc.". For the brain has its distinct physiological function as well as the other organs of the body. Of course, there seems no doubt that this physiological function of the brain bears a close relation to consciousness, and the brain, at the same time, seems to be only an organ through which the mind does its work. We might metaphorically compare this with our speech. Although the voice in our speech is absolutely necessary for us to convey our ideas to other people, it is not the voice, but the meaning behind that plays the all-important part in our speech. Similarly, though the brain is a necessary organ by which the mind is able to exercise its function, it is not the brain, but the content of our psychical life which carries such weight and importance in mental processes.

Therefore, all we know seems to be that there is certainly an intimate relation between the conscious process and the physiological function of the brain. It is in explanation of this that we try to discover the relation of consciousness to the brain action. It seems to me that it would be too obscure to say that consciousness is a function of the brain.

•

III The view that sensation is an effect of physical changes is the point on which Prof, Huxley lays great emphasis. It is obvious that this

THEORETICAL PRINCIPLES

theory is strongly supported by common experience of the facts of sensation. This being so, is not the view that sensation is an effect of a physical cause based on common experience? If it were, there would be no reason why we should admit a causal relation proceeding from the physical changes to a sensation, but deny, conversely, that physical changes are ever caused by an act of volition. From the standpoint of common sense, the fact that certain physical changes in the sensory nerves are always and uniformly followed by sensation is quite similar to the fact that volition is always and uniformly followed by a certain physical change — either in the form of motor discharge or muscular movement. If we admit the former, we should not, at the same time, deny the latter; if we deny the latter, we deny the former as well. The truth seems to be that what holds good of the one should hold good of the other. Therefore, it is very difficult for us, from the same standpoint of common sense, to accept the one, i. e. the explanation of sensation, and, at the same time, reject the other, i. e. the explanation of volition.

To avoid the difficulty above mentioned, let us consider Mr. Hodgson's argument, which is on philosophical lines and explains why what holds true of sensation should hold true equally of all other mental states. "We never find", he says, "sensations setting up the neural processes which are concomitant with them. Take away the sensation, it cannot be done, save by taking away the

THE PROBLEM OF MIND AND BODY

neural process. There is, therefore, dependence of the sensation on the concomitant neural process, but not *vice versa*". "The same reasoning" he says again, "must be taken to hold good also of intracerebral processes and their concomitant psychical events or states of consciousness, I mean such as association, thought, volition, emotion". Then he concludes: "All the ascertainable facts indicate dependence of psychical on physiological phenomenon without a trace of any reaction of the psychical on the physiological".

This line of argument seems to me unsound. First of all, if it were correct to say that we never find sensations setting up the neural processes which are concomitant with them, it would be equally correct to say that we hardly ever find a motor discharge setting up an act of volition which is concomitant with it. It is quite true that if we took away the sensory neural process there would be no sensation; but it is not the least untrue that if we took away volition, there would be no certain muscular movement following from it. Besides, there are many other cases of mental states as well as that of volition; for instance, the so-called "fixed idea" is an evident example. Fixed ideas are of different kinds and different degrees; but the one thing common to all of them is that whenever a certain fixed idea arises in the mind, there is a certain physiological change following it. On the other hand, as soon as the fixed idea is taken away, that certain physiological change is no longer present. This shows, that the cessa-

THEORETICAL PRINCIPLES

tion of certain neural changes can be caused by putting a stop to their corresponding mental states, as well as, that the sensation can be made to cease by putting a stop to its correlative sensory stimulation.

With regard to the view that the same reasoning as is applied to the case of sensation must hold good of all other higher mental states, we have another criticism to offer. We should first remember at this point that sensation is the simplest state of mental process, i. e. the beginning stage of the process of cognition. We cannot safely transfer the causal relation established in the case of sensation to that of all other mental states. The view that will is only a complex composite of simple sensations is absolutely out-of-date. This should also hold equally true of all other mental states which are as complex as the will. This point can be better explained by Dr. McDougall's view of sensation. "Sensations", he says, "are mere incidents of the process of cognition, and no amount of compounding sensations will result in an act of cognition, a knowing of object; still less will it produce a judgment, an inference, a train of reasoning, or an act of will".

Over and above this, we can clearly distinguish between the case of a sensation in which the conscious process is so simple that it is the same in the adult as in the child or higher animal, and those cases of higher mental states in which the part played by consciousness is so active and complex that it is quite different in the former

THE PROBLEM OF MIND AND BODY

case and in the latter. We might, therefore, conclude that all ascertainable facts do not necessarily indicate the complete dependence of psychological on physiological phenomenon.

IV Is our voluntary action as purely mechanical as reflex action? In discussing the question at issue, we should ascertain first what the nature of so-called reflex action is; secondly, we should inquire into the question. — Is it possible to regard voluntary action as purely mechanical?

We have seen in the foregoing chapters, that many modern physiologists and psychologists hold that reflex actions are not accompanied by consciousness at all. If this assertion is true, the nature of reflex action is rather contrary to that of voluntary action, — for it is not only supposed to be accompanied, but determined, by consciousness. On the other hand, even if we admit that reflex action may be said to be merely accompanied by a certain degree of consciousness (in its wider sense) as we have described before; can we, then, regard the psychical element in reflex as the same as that in voluntary action? Certainly not; for it is not the reflex action, but the voluntary one which gives rise to the question of responsibility. Those who act involuntarily, are not so responsible as those who act voluntarily. This is why we fail to see how reflex action can be identified with voluntary action.

Secondly, if voluntary actions are regarded as purely mechanical, then all human conduct, which

THEORETICAL PRINCIPLES

is supposed to be purposive and teleological, can be brought under purely mechanical law. Consciousness is thus reduced to no more than a uniformly physiological sequence. In consequence of this, a human being, instead of being the author of his action, becomes, only an 'inert and passive spectator' of physical events. If this were the case, we could not understand why one who is merely a spectator should be responsible for an action caused entirely by certain physiological changes in the brain. In so far as the brain event is the real author of the voluntary action, the responsibility for it should, of course, be ascribed to that brain event, not to the individual, as he will not take any responsibility for an action which he did not perform or expect to happen at all.

Moreover, if our voluntary actions can be mechanically interpreted, then 'the freedom of the will', 'deliberation and choice', 'intention and motive', etc. seem to have no meaning, i. e. to have nothing to correspond to in a universe in which every event and action is fatally determined by the laws of nature. Nay, even our belief in such things as moral duty, or obligation, or right and wrong seems to be merely based on illusion. Can this be true? Of course not, for if it were true, the foundation of ethical science, i. e. moral obligation, would be destroyed, and the whole history of moral philosophy would be rendered valueless. In any case, it is difficult to see how we can possibly regard voluntary action as purely mechanical.

THE PROBLEM OF MIND AND BODY

I In dealing with the first question, we can divide it into two parts. Firstly, let us examine whether the conception of consciousness as a mere epiphenomenon of the brain process is a legitimate one. Secondly, let us consider in the light of metaphysics whether the physical universe, i. e. matter, is the ultimate reality.

(A) *Is the conception of 'consciousness as a mere epiphenomenon of the brain action a legitimate one?* An epiphenomenon seems, in this theory, to mean either something dependent, or something residual. It is chiefly due to the fact that the brain is a thing relatively permanent and substantial, while consciousness is rather evanescent and non-substantial that we regard consciousness as something dependent on the brain. In consequence of the idea that the mind is dependent on brain process, we deduce from it the proposition that it is not only the brain process which is the cause of consciousness, but that the latter can never be a cause itself, but a mere effect or consequence. Mr. Hodgson, in defence of automatism, asserts on this point that concomitance or mere simultaneity is not an adequate scientific conception. The simultaneity, if it be not purely accidental, must be traceable to a relation of dependence, which is the fundamental conception of science. This is the same thing as "what is commonly called causality". It might be true to say that mere simultaneity is not an adequate scientific conception, but we can hardly regard a

THEORETICAL PRINCIPLES

relation of mere dependence as the same thing as what is called causality. Külpe takes a decided view on this point. "The idea of the relation of dependence" he says; "is far more general than that of causal relation Hence the assertion of a relation of dependence between psychical and physical processes must be sharply distinguished from the assertion of their causal connection". Besides, we might say that the idea of a relation of dependence is derived from a purely empirical standpoint, so that it is not so clear as that of causality. Therefore, it is not the relation of dependence, but rather the causal relation or causality that is the fundamental conception of science.

Even if we take for granted Mr. Hodgson's argument as to the causal dependence of mental process upon brain process, we still see no reason why consciousness should be a mere effect instead of being a cause of other processes in return. It seems to me that the law of causality which holds true in the physical world should hold equally true in the psychical world, especially since consciousness is distinctly recognised as an effect of the physical process. In the physical world, we cannot find any physical effect which is a pure effect only, as it always becomes a cause of some other physical process. This granted, there remains no reason why consciousness should not become a cause of some other process. Therefore, we can hardly say that consciousness is a pure effect only, unless we first

THE PROBLEM OF MIND AND BODY

deny the fact, asserted by the automatist, that a mental process is produced by a physical antecedent just as well as a physical process.

On the other hand, if consciousness is regarded as something residual, there seems no reason why the physical universe should have such a process as the mental at all, for with such an assumption it would have made no difference to the world, had consciousness never appeared. But one moment's reflection will be sufficient for us to see the untruth of the above statement. First of all, it is easy to see that we cannot become acquainted with matter, except through the mental determination. Though it is doubtful if consciousness is the fundamental and ultimate reality in the last resort, we can assert without hesitation that consciousness should be regarded as something equally as real and efficient as brain action.

The more closely we examine the relation of consciousness to the physical universe, the more certain we feel that the latter cannot dispense with the former. Does not the modern progress of physiological psychology give great weight to the view that consciousness is only something residual, i. e. a mere phenomenon? On close investigation of what has made experimental psychology so progressive recently, it will be found that all knowledge gained from experiment is mainly dependent on our power of introspection. Experimental psychology, thus, may be said to be no more than a practical study of introspec-

THEORETICAL PRINCIPLES

tion, and the latter, moreover, seems to be prior to the former. For 'all objective methods of psychological study presuppose the results of the subjective or introspective method, and can only be fruitful in so far as they are based upon an accurate introspective analysis of mental processes'. "Experimental psychology", Külpe says: "without introspection is a plaything borrowed from physics". We may be excused, in this way, for thinking that the reverse is true and that mind is more real and fundamental than matter.

On the whole, we should say that the conception of consciousness as a mere epiphenomenon, i. e. either as something dependent or as something residual, is neither proved nor justified, and conclude with Külpe's view; "An impartial observation shows that mind is dependent upon body; and body is dependent upon mind."

(B) *Is matter the ultimate reality?* In discussing this question, we must know first what we mean here by 'a reality'. A reality, according to this theory, seems to mean 'something that exists of itself and in its own right'. The automatist thinks that it is only matter that can be identical with such a reality. Is this true? For the solution of this question it is necessary to appeal to metaphysics. We must admit at the same time that there is a difficulty in discussing such a big subject as metaphysics in so short a space as this chapter allows. However,

THE PROBLEM OF MIND AND BODY

it will be enough for our present purpose to call attention to certain essential principles in metaphysics, from which the automatist might derive support for his theory, viz., naïve realism and the theory of things-in-themselves.

(1) *Naïve Realism.*

This principle is derived from the experience of the ordinary person who thinks that all the sensible attributes of a physical object, when it is seen and touched, are not different from those attributes when it is unseen and untouched, for the mind is regarded, by the naïve realist, as a mirror, in which all the sensible qualities of an object can be shown; so the object with all its qualities, at the same time, exists independently of the mind. Our perception of a certain object is the exact representation of that object in the mind, and such an object would remain quite the same as it was before, even when the process of perception was over.

From the view that the mind has the power of mirroring the physical world, we are led to the belief that all objects in the physical world can be directly and intuitively known to us through our perception. Hence, it seems that so-called reality consists of no more than the physical universe, whose existence is distinct from, but whose qualities are mirrored in the objects of our perception, and the reality is represented by the physical universe. Is it possible that the physical object seen and touched, exists entirely apart

THEORETICAL PRINCIPLES

from our mind? Is it true that the ultimate reality simply consists of the physical world known to us through perception? Perhaps we had better leave this question unanswered for the present, until we have reviewed the following general criticism of this principle.

(a) In so far as an object is perceived, there is always a mind by which it is perceived. We seem to forget the percipient mind when we talk of the existence of the physical object. A sound can be heard because there is a percipient mind. The same holds true of other sensible qualities. Therefore, the physical object we immediately see and touch can by no means be regarded as something extra-mentally real.

(b) It is not the attributes of an object which are most important, but the conception of it in which all essential attributes are implied and included. Those who are born deaf are still able to form a conception of things, notwithstanding their ignorance of a certain sensible attribute, i. e. sound. Similarly, those who are born blind are also able to form ideas of things. The naïve realist, thus, commits the fault of objectifying his perception too much, and overlooks the conceptual character of an object altogether.

(c) The last criticism is that in perceiving an object, we can recognise that there are certain qualities at least, which are secondary and subjective. This leads to the distinction between primary and secondary qualities; the latter are supposed to depend on the former. This distinction,

THE PROBLEM OF MIND AND BODY

from the scientific point of view, seems to be valid. But on closer examination, we find that not only the secondary qualities, but even the primary qualities are based on the mental determination; for so-called primary qualities, such as shape, size, etc. must be capable of being seen; otherwise, they would lie beyond our perception altogether. Therefore in any case, the principle of naïve realism cannot be defended.

As a result of the above criticisms on naïve realism, most philosophers, especially the idealist in modern times, maintain that physical objects have no existence independently of the mind, and that the former seem to consist more or less of a modification of the latter. If the physical objects have no existence totally distinct from the mind, the very foundation upon which the naïve realist bases the ultimate reality is shaken. Therefore, even if there were a reality which could exist of itself as the automatist seems to assert, it should be sought for in something different from what naïve realism calls the physical world, which seems to be based on a false conception. This being so, it is not possible for automatism to find shelter under the wing of naïve realism; for the latter is itself a metaphysical principle based on unsound premises.

(2) *The Theory of "Things-in-themselves".*

By 'things-in-themselves' are generally meant 'realities which exist independently of the mind and which are supposed to be symbolised by the

THEORETICAL PRINCIPLES

physical universe'. The automatist is easily tempted to connect his principle with this view, inasmuch as such things-in-themselves are regarded as being purely material in nature. It is upon such an assumption that he seems with reason to believe that the ultimate reality is matter, and consciousness a mere epiphenomenon of the brain process. Such a reality, which is supposed to be purely material, is sometimes called extra-mental reality.

In so far as we regard such a reality as extra-mental we must believe it to exist apart from the mind. Hence comes the question — From what source do we know that there is such a reality? The only way through which we are able to become acquainted with the physical world is through perception. Can we then say that realities or things-in-themselves, are also known through perception? This question depends upon whether the so-called extra-mental reality is identical with physical objects or not. Material objects, as we have said, have no existence independently of consciousness. Things-in-themselves are supposed to be realities which are entirely extra-mental, therefore they cannot be regarded as identical with those material objects, especially as the latter are more or less subject to the mental determination. On the other hand, physical objects, according to the view of those who believe in extra-mental reality, are only symbols of things-in-themselves, so that the real nature of things-in-themselves is not necessarily exemplified by the

THE PROBLEM OF MIND AND BODY

symbols of them, for it should lie in something behind symbols, i. e. the physical universe, which can be known through perception. In any case, such extra-mental reality cannot be identical with the physical objects, so that it must be something which is incapable of being seen and touched. In a word, such reality cannot be known through perception.

If things-in-themselves are such a world as cannot be experienced through perception, then the question of how we know that there are realities beyond the physical universe, is still unanswered. Since we know that if things-in-themselves exist, they cannot be directly experienced through perception, we should think that the supposition of the existence of things-in-themselves must be derived from inference i. e. through thought. This being so, even if there were extra-mental realities, they could never be known except through the medium of consciousness, for inference is in itself a mental process. This may prove that even if things-in-themselves exist, they can hardly be said to be entirely material, since the possibility of our knowledge of them is derived from inference.

On the other hand, even if we take for granted the possibility of the existence of so-called extra-mental reality, its nature is still obscure or unknown to us. Then how can we know that such reality is 'matter'? Even granted the assumption that matter is the reality, what is the matter like? We have no means of describing it. The only

THEORETICAL PRINCIPLES

name we can give it is 'unknown matter'. But such a name as 'unknown matter' seems to be contrary to the conception of reality, for in so far as anything is supposed to be 'unknown matter', it can hardly be regarded at the same time as real. It seems to me that anything real should presuppose two indispensable factors, viz., utility and value. In so far as anything is totally unknown to us, we can hardly see that there is any utility and value in it; consequently, it seems to be unreal. That material objects seem to be more real to man than to animals is because the former can understand them better and thus make them useful and valuable. Similarly, the physical universe seems more real and efficient to the scientist than to the ordinary person, for the former knows its system and value better than the latter. Thanks to the modern progress of the physical and chemical sciences, many elements, which were formerly unknown to us, have now become generally known. Many things which were supposed to have no utility or value before, have become useful now. A great many new things now-a-days, which have never been heard of before, have been invented wholly by scientific work in chemistry. Over and above all this, our knowledge of the physical universe does not consist only in our understanding of the causal relation between physical events (i. e. in our merely knowing that a certain physical cause is followed by a certain effect) but also in our knowledge of a quantitative relation between cause and effect. It

is because of this that the physical universe seems to us to be much more real than it was before. Therefore, we may say that the better we understand the material system, the more utility and value we can get out of it, and the more it is utilised and valued, the more real it seems.

It is curious enough that we think there is an extra-mental reality mainly because of the fact that the material system has been worked out and understood better by modern scientific methods, but we seem to forget what makes us think the physical world real, when we talk about things-in-themselves. Even if things-in-themselves exist, we should remember that what we think is real must be something understood, systematic, utilitarian and valuable. This being so, how can we regard such things-in-themselves as 'unknown matter' and 'fundamental reality' at the same time? Such things-in-themselves consisting of nothing more than a meaningless and chaotic substance cannot be regarded as reality, unless they have been first placed in order and systematized through our understanding.

Thus, in the end, even if there is a possibility of the existence of things-in-themselves, it must be noted that such existence is derived from inference, and cannot be realized and become real, except by our understanding of their nature. Since both inference and understanding belong to the sphere of consciousness, it would be correct to say that things-in-themselves can never be known

THEORETICAL PRINCIPLES

except through the medium of consciousness. In this way, we see that automatism can hardly derive strength from the theory of things ~~in themselves~~ though it may appear at first to do so.

CHAPTER VIII.

THE THEORY OF PARALLELISM.

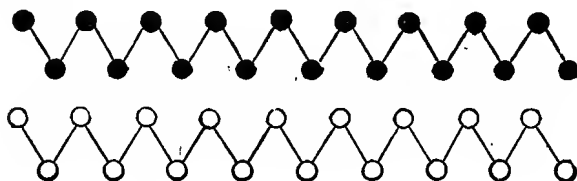
The theory of parallelism is based on empirical facts for its evidence, but its final explanation must be sought in terms of metaphysics. It is for this reason that we may distinguish 'popular naïve parallelism' from 'metaphysical parallelism'. Let us examine them in turn.

Popular Naïve Parallelism.

This is a theory founded on empirical evidence, and, as we have already seen, involves two essentials, viz.: —

(1) A contemporaneous and correlative happening of two events — the mental and the bodily.

(2) A non-causal relation between these events. It may be represented by the following diagram:



The psychical and physical are represented by circles and black discs respectively. At the

THEORETICAL PRINCIPLES

same time both sides, though running parallel, are independent of one another.

This popular naïve parallelism, as indicated by the above diagram, is no more than a formulation of empirical facts, and does not explain why the one should happen simultaneously with the other, nor what the ultimate relation of the one to the other is. All this must be left for metaphysics to work out. For the sake of convenience we had better call this crude type of parallelism 'the empirical psycho-physical parallelism' in order to distinguish it from 'metaphysical parallelism'; since the former belongs to physiological psychology rather than to metaphysics.

Again, the principle of parallelism may be considered either in a broad, or in a narrow sense. This depends upon whether psycho-physical parallelism holds true only of the brain process or can be applied universally. Of course, there seems no doubt that all the physical processes in the brain are accompanied by their corresponding psychical states. But as the brain is a part of the material system, can we legitimately infer from the processes in the brain, that all physical processes within the material system — even the processes of the inorganic realm — have their psychical correlates? This question too, belongs to the sphere of metaphysics. Here we should notice that the popular doctrine of parallelism is confined to the principle of parallelism in its narrow or restricted sense.

THE PROBLEM OF MIND AND BODY

We have seen that this naïve parallelism is supposed to formulate empirical facts known to us. Such an empirical view, of course, draws its support especially from certain principles in the sciences of physics, physiology, and psychology. Still there are certain general arguments in favour of this theory, which may be formulated as follows: —

(1) The advantage of the division of labour.
— The parallelistic view of mind and body enables us to work on two separate lines, and to trouble no longer about the question as to how the one produces the other. It is the work of the physiologist to consider the physiological processes which are completely determined by physiological antecedents. He should show how the former comes from the earlier stages of a physiological process. In the same way the psychologist or the philosopher should deal with the mental process on its own lines. In this way, each branch of study ought to make great strides through this division of labour.

(2) The value of a good working hypothesis.
— It is by virtue of the rapid progress of the study of the correlation between the nervous processes and the psychical states, that we are led to make a bold speculation and assert that there is a minute correlation between the body and the mind, hoping to work out such correlation fully in course of time. Although this is a bold speculation, it is a good suggestion to work on. Thus, parallelism,

THEORETICAL PRINCIPLES

according to Stout, 'certainly covers the known facts and forms the most convenient working hypothesis'. And Prof. Wundt regards parallelism as 'an empirical postulate', and thus psychophysical parallelism should be accepted as 'a heuristic principle empirically based'.

(3) Reconciliation between philosophy and science. — There has been a strife between the principles of philosophy and scientific knowledge in modern times. This is partly because philosophy is not so systematic and substantial as natural science, and partly because philosophical knowledge cannot be subjected to inspection and calculation. It is the aim of the theory of parallelism not only to admit the validity of all the teachings of natural science, but also to retain our faith in the value of philosophy. Philosophy and science each has its own laws, which must be taken into consideration, — neither of them should interfere with the sphere of the other. Thus, through the theory of parallelism, a reconciliation could be effected between philosophy and science.

Besides these general arguments in favour of parallelism, there are also certain principles in physics, physiology, and psychology which strongly support this theory, and which may be summed up as follows: —

(a) The principle of kinetic mechanism. — The fundamental conception of mechanical law is that all physical processes consist of motions of the particles of matter. As this principle of kinetic

THE PROBLEM OF MIND AND BODY

mechanism has proved such a useful working hypothesis for the development of modern physical research, it seems possible to apply it universally to the physical world. If the processes of the physical universe consisted simply of movements between particles and their changes, then there would be no room for psychical influence. If psychical influence be ruled out from the physical world by the universality of mechanical laws, then mind can never be the agent of physical processes.

(b) The law of the conservation of energy. — This is supposed to be another authoritative principle which does not allow of the admission of psychical influences on physical processes. The sum total of the energy of the physical universe is assumed to be constant, and the transference of energy from one part to another in the physical system will result in an exact quantity being conserved in the latter equal to that which disappeared in the former. If any psychical factors were thought to influence the physical processes, or *vice versa*, there would result in either an incoming from the psychical side, or an outgoing from the physical side. The law of the conservation of energy would thus be violated.

(c) Cerebral anatomy. — The localization of specific sensory and motor areas in various cortical centres corresponding to certain definite mental states, has been confirmed by cerebral anatomy. It is expected that studies in cerebral anatomy will be further improved so as to throw more light on the parallelism of mind and body.

THEORETICAL PRINCIPLES

(d) The reflex type of all nervous processes. — It has been shown that the whole nervous system is established upon a reflex plan, so that all nervous processes are supposed to be of a reflex type, i.e. as we have already said, to consist of the transmission of nervous impulses through the reflex arcs by a chain of purely physical causation. Thus the nervous system is self-contained, and is thought to be entirely excluded from psychical influence.

(e) Analogy of mental and physiological dispositions. — There seems to be an analogy between the laws of retention, memory, habit, and association in psychology and the theory of the formation of conductive paths among the nervous elements in physiology. Therefore, dispositions, though after-effects of certain specific mental states, "may be regarded", as Stout says, "from another point of view as physiological facts", and he therefore thinks that "it is appropriate to speak of a psycho-physiological disposition".

The above statements show that popular naïve parallelism derives its strong support from a great many empirical facts and principles. Nevertheless, no explanation has been offered by this theory of all the empirical evidence mentioned, and the task of further explanation is thus left to metaphysics. In consequence of this, there are two advantages claimed for this theory; one is that it does not commit itself to any view as to a final decision concerning the relationship between mind

THE PROBLEM OF MIND AND BODY

and body, since that belongs to the sphere of metaphysics; another is that in this way the theory avoids the difficulties raised either by internationalism or by automatism. Perhaps this is the main reason why the popular doctrine of parallelism seems to some thinkers more attractive and acceptable than either of the other theories.

Metaphysical Parallelism.

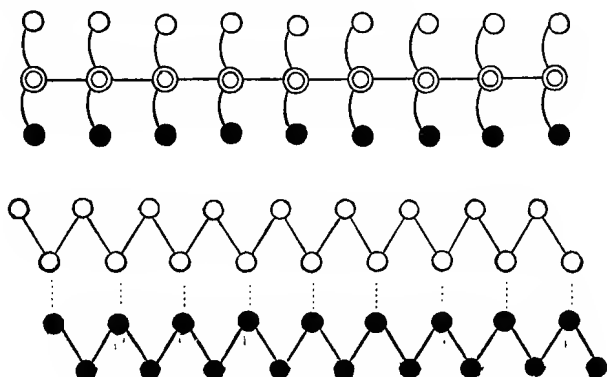
The parallelist is not satisfied with a mere empirical postulate formulating all the psychical and physical facts, but tries further to explain their relation from a metaphysical standpoint. It should be remembered that whenever we seek to connect two things, we have to find out a third thing which is related to both of them; i. e. a medium through which the one can be connected with the other. In a similar manner, the principle of identity is adopted by the parallelist to explain empirical parallelism. It is supposed by the principle of identity that a psychical series can be linked with a physical, and *vice versa*. The principle of identity of mind and body may be stated under two forms: —

(1) The first makes the physical and psychical processes two different manifestations of a single reality. This is called psycho-physical monism.

(2) The second regards only the mental process as being real, the physical being merely phenomenal. This is called psycho-physical idealism.

THEORETICAL PRINCIPLES

These two theories may be illustrated by the following diagrams respectively: —



In the first diagram, the double circles indicate the processes of 'reality', the blank circles and the black discs represent its two different aspects or manifestations, viz., the mental and the physical. Both of them are equally causally connected with reality; this is indicated by the parallel lines. In the second diagram, the blank circles represent the mental as the only reality, while the black discs represent its phenomenal physical process. The fact that the former is expressed or symbolized by the latter is indicated by the dotted lines between them.

(I) *Psycho-physical Monism.*

This is one of the metaphysical explanations offered for empirical parallelism, and regards both mind and body as two different aspects or mani-

THE PROBLEM OF MIND AND BODY

fetations of one and the same reality. We may state this under two forms: —

- (a) The two-aspects theory, which is really the theory of Spinoza.
- (b) The 'noumenal' theory, which was first suggested by Kant and adopted by many subsequent writers.

(a) *The two-aspect theory.* — Spinoza starts with the conception of the co-ordinate reality of two distinct worlds, that of thought and that of extension; but to avoid a dualistic view of mind and matter, he maintains that they are, in the last resort, only one substance. The difficulty is, — if they are really one substance, why do they present themselves under two such distinct forms? In other words, what is the precise relationship of the two aspects to the ultimate substance? Spinoza, instead of answering this question, is merely able to draw a comparison between the two aspects of one substance and the two sides of a shield — one convex and the other concave. This is really a simile rather than an explanation. Besides, such a simile is not in itself satisfactory. In the first place, the two sides of a shield, though different in shape, are similar to each other in nature, as they are both material. But mind and matter, though supposed to be one substance, are different not only in their form, but also in their nature. In the second place, we recognise the two sides as belonging to one and the same shield because we already understand what a shield is. The con-

THEORETICAL PRINCIPLES

ception of a whole shield and the clear idea of its convex and concave sides seem to be necessary before we can comprehend the precise relation of a shield to its two opposite sides. On the other hand, not only do we not know what the substance of the two-aspects is, but we do not even quite fully understand its two-aspects, i. e. mind and matter. That is why even Spinoza's system seems unable to show what is the precise relation of the one substance to its two-aspects.

Even if we admit that mind and matter are two different aspects of one substance, it does not necessarily follow that the two different aspects run strictly parallel, for though the different aspects belong to the same thing, they may be in various relations and in different orders. For instance, colour-tone and brightness are two aspects of the same visual sensation, but they are not in a parallel order. Cognition and feeling are different aspects of one and the same mental process, but they are rather in an inverse relation, i. e. increase of the one is followed by the decrease of the other. Perhaps such a strictly parallel view can only be expected to work out between consciousness and the nervous process, but this relation can only run to a certain length, i. e. it is limited to organic beings, for there is as yet no principle which is able to bring the inorganic and the organic worlds together. This being so, there seems no reasonable ground for extending the parallelistic view universally to all the phenomena of the physical world.

THE PROBLEM OF MIND AND BODY

On the other hand, the two-aspect theory does not altogether lack favourable aspects. In the first place, the theory seems to be established on the ground of epistemology, for it starts with the recognition of "the reality of the two-sided datum of experience". Our experience has never been wholly presented either in the bodily or the mental form, but always as a unity of subject and object; so the hypothesis of one substance underlying two aspects seems to be based on the unity of the dualistic datum (i. e. the subject and object of our experience).

Secondly, this theory seems at least to throw some light on the nature of the ultimate reality, which may be suggested to be partially mental and partially material. Again, the identity of the two aspects in one substance shows such an intimate relationship between the material and the immaterial system as to suggest that either of them must presuppose the other. It at least suggests a line for us along which to carry out further examinations of the ultimate problem.

(b) *The 'noumenal' theory*, — Kant is the first one who, although co-ordinating mind and body as two different attributes of one substance or reality, maintains that both of them are merely phenomenal, and that there are things-in-themselves behind both. According to him, there are two different realms. One is the sensuous or empirical realm, of which all physical phenomena consist, and to which our body belongs. To this sensuous or empirical realm is opposed the spiri-

THEORETICAL PRINCIPLES

tual or rational realm to which our spiritual life or rational faculty belongs. It is through both the worlds of physical and mental phenomena that the ultimate reality manifests itself to us, but we must remember that the ultimate reality is not necessarily like either of them. Such a reality is after all neither a material being, nor a thinking being, but something unknowable. A similar theory of the Unknowable is also held by Herbert Spencer and some other later agnostic thinkers.

The difficulty in this theory seems to be that in so far as we can never understand what the thing-in-itself is, we cannot form the slightest idea of what its attributes are, or know what its relation to other things is, for unless we know the nature of a thing, we can hardly attribute certain qualities to it. Moreover, even though the material and mental processes are known to us, it is still a problem disputed by philosophers, whether the former is an attribute of the latter or *vice versa*. This being so, how can we know that the mental and the physical bear an equal relation to one another through being two attributes of the so-called never-known reality. It seems to me that if the mental and the physical are two attributes of one reality, we are naturally disposed to imagine that this reality must be partly like each of them, though its entire nature cannot be known.

To say that the unknowable thing-in-itself is the only reality, seems equal to saying that anything known to us is unreal. In this way, all the known facts either empirical or philosophical

THE PROBLEM OF MIND AND BODY

would not be supposed to be real, but illusory. Again, not only is the materialistic view that nothing is real "beyond and above the mechanical inter-connection of natural, sensible, material things in the physical universe", untrue, but also the idealistic view that our thoughts and feelings, "so long as they last, are as real as anything can be", is untrue. Even if we take all this for granted, the difficulty still exists. Since we cannot define precisely what 'reality' is, how can we presume the impossibility of its being accessible to our knowledge? Then comes the paradoxical question — How can we know something that we are unable to know?

However, if we further examine the 'noumenal' theory, it seems that, though the 'thing-in-itself' appears to Kant at first to be something inaccessible to our knowledge, yet according to the gradual development of his system, it points to a pure conception. It is a pure ideal of thought, which, though it cannot be applied to anything, seems able to be apprehended by 'a kind of intellectual faith'. Thus, the unknowable reality tends at least to be conceived of as 'a pure ideal' constituted by thought. If such a view is adopted to explain the parallelism between mind and body, the unknowable reality behind both must be considered as mental in its essence or substance. Then the difficulty lies in that we can hardly regard consciousness as being co-equal with the physical in relation to reality, while the so-called thing-in-itself is mental in its essence or substance. Be-

THEORETICAL PRINCIPLES

sides, looked at in this way, the theory tends to be a sort of idealistic realism only from a parallelistic standpoint.

Finally, we must remember that Kant seems to suggest a general parallelistic view only of psycho-physical phenomena under an unknowable reality; he does not attempt to take his explanation as far as the parallelist does. For this reason it seems correct to say that Kant is a psycho-physical monist rather than a psycho-physical parallelist.

(II) *Psycho-physical Idealism.*

This theory, which attempts to evade the difficulties arising from, or due to, the unsatisfactory explanation of the relation between mind and matter offered by psycho-physical monism, holds that consciousness is the only fundamental and ultimate reality, symbolized by the brain as well as by the physical universe. Causal efficiency is, in this way, ascribed wholly to consciousness, through which the physical world is able to appear to us as something phenomenal.

Here we should notice that we must not identify this theory with so-called subjective idealism i. e. solipsism, which is based on the assumption that every object of our experience is originally a content of consciousness. The difference between these two theories lies in the fact that the latter, denying not only the existence of the physical universe, but even the reality of other minds than one's own, thinks that the only rea-

THE PROBLEM OF MIND AND BODY

lity is one's own ideas, thoughts and feelings, while the former regards consciousness as a universal reality, not confining it merely to one's own mind, but extending it to the consciousness of others as well as to the physical universe. According to this theory, therefore, my own consciousness, which is symbolized by the brain processes, is in itself a reality, and so is the consciousness of other people, similarly symbolized by their brain processes. If the actual perception of a man's brain, symbolizing his consciousness, could possibly appear before us, it would not be different from the perception we experience in the physical universe, symbolizing an universal consciousness. Thus, there are two fundamental propositions underlying this theory.

(1) As consciousness or conscious process is the only ultimate reality, the thing-in-itself must be mental in nature.

(2) As the physical processes are the phenomena under which their conscious aspects are manifested to us, so there is a universal consciousness permeating the organic and inorganic worlds.

From the above propositions we know that there is a whole immaterial system, which is correlated with and symbolized by the system of physical processes as a whole. Just as my mind is merely one part of the whole immaterial system, so my brain is a part of the whole material system. This theory is therefore based on an idealistic view of the psycho-physical relation of

THEORETICAL PRINCIPLES

the empirical facts. It thus seems plausible and satisfactory from the following points of view: —

(1) Firstly, this theory unites the physical world and the psychical system into a monistic scheme. Thus the physical universe, through which the fundamental reality is manifested to us, seems to stand in a natural and systematic relation with consciousness, the only reality. Granting this, not only are all the teachings of physical science, especially the law of mechanism, valid, as they are symbols of real processes, but the principle of philosophy may also be regarded as superior to all. Paulsen expresses the same view in a slightly different way. "The function of philosophy", he says, "is to mediate between science and religion to reconcile their teachings and aspirations. A reconciliation of science with religion can only be effected by admitting the claim of science to furnish causal explanations of all events in terms of mechanism, while reserving for religion the task of providing an idealistic interpretation of the mechanically caused events". But we must remember that the 'reconciliation' here meant is different from the 'reconciliation' mentioned in empirical psycho-physical parallelism, since the former aims at a reconciliation between principles, while the latter does not.

(2) The belief in the efficiency and reality of mind is another plausible point in this theory. Although matter appears at first sight to be more substantial and real than mind, yet, as we have said before, a moment's reflection will convince us

THE PROBLEM OF MIND AND BODY

that only through and by mind is matter knowable to us. This point is clearly set forth by Prof. Stout, when he says that, "matter is essentially a phenomenon; and phenomenon simply means appearance or presentation. There can be no appearance apart from a subject to which an object appears or is presented So far as it (matter) exists independently of its presentation to a cognitive subject, it cannot have material properties". This statement is also used by the idealists to attack both the principles of automatism and popular parallelism. If we do recognise that the physical universe always presupposes a psychical system, then it is to the latter that we should ascribe primacy and reality. Thus the theory at issue can no longer be attacked in this way.

(3) Thirdly, this theory, though based on an idealistic view, is not inconsistent with the law of psycho-physical correlation, which states that 'every psychosis is correlated with a neurosis'. We have seen how the law of psycho-physical correlation brought about an intimate relation between mind and matter, and how it had great weight and importance in the theory of epiphenomenalism. The theory in question, on much the same ground, simply converts the view of epiphenomenalism, without any more ado, into an idealistic view, which regards only consciousness as real, and matter as a mere shadow thrown by the former, and thus brings out the close relation between them. Therefore, the law of psycho-

THEORETICAL PRINCIPLES

physical correlation is not only far from being inconsistent with the idealistic interpretation of psycho-physical parallelism, but the latter can also find shelter under the former.

It is by virtue of the above arguments in favour of this theory, that many distinguished modern authors regard the idealistic explanation of the psycho-physical relation as the most satisfactory and appropriate doctrine. It is thus supposed to be superior to all others. This might be so with regard to certain points, but there are still some points in this as well as other theories, which are not by any means satisfactorily established. Let us begin by considering how consciousness is to be regarded as the reality in the theory.

The assertion "the only reality is consciousness" seems to be the fundamental conception of psycho-physical idealism. The manner of interpreting such a fundamental conception is rather different with different authors. Clifford starts with the view of mind-stuff. What is mind-stuff? He asserts that mind-stuff is the factor of which elementary feeling is composed; the former is the reality represented by matter, the latter is a thing-in-itself. Consciousness is built up of such elementary feelings grouped together in different systems. In this way, consciousness must be regarded as a reality, since its origin is ultimately derived from mind-stuff. But we should remember that he does not admit that a moving molecule of inorganic matter possesses a mind or consciousness, except simply "a small piece of mind-stuff".

Nevertheless, there is no difference in nature between the mind-stuff possessed by inorganic matter and the mind possessed by a human being, save only a difference in the degree of its complication, for the former is just as much a reality as the latter. To use Clifford's expression, consciousness in organic beings is a mere complex "of elementary feelings or rather of those remoter elements (i. e. mind-stuff) which cannot even be felt". Thus even the stream of our consciousness consists simply of a number of such elementary feelings or mind-stuffs united together. Therefore, in the end Clifford makes consciousness real by first making mind-stuff real. Again, he admits that each of these elements (i. e. elementary feelings or 'mind-stuffs') is capable of being demarcated from the other parts with which it has been combined to form consciousness. This being so, the elements out of which consciousness is formed are similar to the elements, viz., particles, atoms, etc. from which all material things are built up. Hence we might say that Clifford makes mind-stuff real through ultimately regarding it as similar in nature to physical particles. Prof. Ward seems to be quite right in saying "Clifford's exposition of mind-stuff is only matter-stuff over again", for he is adopting a materialistic view to explain how efficiency and reality can be ascribed to mind.

Prof. Strong, in a rather different way, asserts that consciousness is the only reality. Having disproved the existence of a non-phenomenal subject, he declares that "the stream of consciousness with

THEORETICAL PRINCIPLES

its empirical characters enters on the reality now vacated by the soul or subject. In this reality every thought and feeling shares. Again, for instance, at the moment when it is felt, it is as real as anything can be. It is no mere phenomenon A perception, again, is a phenomenon as the symbol of an extra-mental reality, but in itself, as a state of consciousness, it is real". Consciousness is thus, in itself, a prime reality and is supposed to be the only part of things-in-themselves with which we have immediate contact. However, Strong admits that 'consciousness is not a permanent reality, since it is subject to interruptions', but 'so long as it lasts, it is as real as anything can be'. "We exist", he adds again, "actually only so far as thoughts and feelings become actualized in consciousness". This seems to him to be another reason strongly proving that our consciousness is ultimately real.

The difficulty with this view is that Prof. Strong takes consciousness here to mean only the current process or stream of consciousness, whereas our psychical life is more than the stream of consciousness; for besides the stream of consciousness there is something which, like a thread, holds the stream of consciousness together, i. e. a subject or personality. It is rather a constant and stable condition, and is not subject to any interruption whatever. It seems then, that our essence or existence lies in the so-called personality rather than in the mere stream of consciousness, which is always changeable, and subject to interruption. This is why the

THE PROBLEM OF MIND AND BODY

former is sometimes called a soul or 'Ego'. If we take consciousness in its full sense, it may be supposed that both the stream of consciousness and the so-called personality are different aspects of one and the same mental life. However, if consciousness is regarded as the only reality, as Prof. Strong urges, then, it is not this aspect of consciousness i. e. the current mental process, but its other aspect, i. e. the subject or personality, which we should emphasize. Nevertheless, it is obvious that Prof. Strong's interpretation of the primacy and reality of consciousness is different from Clifford's, for it is a purely idealistic view, based on empirical evidence.

Having studied the different attempts to explain consciousness as the ultimate reality, let us examine how this theory deals with the interrelation of the whole psycho-physical system.

According to this theory, we seem to infer, from the premise that the brain, a material object, symbolizes a reality i. e. consciousness, the conclusion that all material objects, which build up the physical universe, are the external expressions of what is the ultimate reality i. e. universal consciousness. To make this statement clearer we had better quote Prof. Strong's words. "We have two things", he says, "the brain process and consciousness, and the question is as to their relation. The brain process is a phenomenon and every phenomenon symbolizes a reality, and consciousness is a reality if the reality symbolized by the brain process is distinct from consciousness,

THEORETICAL PRINCIPLES

then the two are loosely and externally attached as we commonly conceive brain and mind to be attached, and the problem is simply transferred to another sphere and perpetuated. Whereas, if the reality symbolized by the brain process is consciousness itself, their connection is explained and the problem solved". "On every other hypothesis", he adds again, "The duality of mind and body is either a duality of existence or a duality of disparate phenomena on this hypothesis the duality is that of a reality and its phenomenon; this, for believers in things-in-themselves, is a *vera relatio* and the connection is, therefore, explained by being subsumed under the relation of phenomenon and thing-in-itself".

Having established such a close relationship between mind and body, he thinks that psychophysical idealism is at bottom a doctrine of identity rather than of parallelism. It seems true that the connection between mind and body set up by this hypothesis is closer than in other theories, especially if the reality symbolized by the brain is consciousness itself. And it is on this basis that mind and body stand no longer in the relation of what the naïve parallelist calls a simultaneous happening, but in an intimate connection between the thing-in-itself and its phenomenon. In this way, it appears to desert the fact of simultaneity for the principle of identity; to use Strong's expression, It is 'no parallelism but a single series'. Perhaps the plausibility of this theory lies mainly in the essential principle of a single series.

THE PROBLEM OF MIND AND BODY

This principle of identity or of a single series is not maintained by Prof. Strong alone. If we examine Clifford's theory, we find it based on the same ground though arranged in a different order. We have seen how Clifford maintains that a moving molecule of inorganic matter possesses only a small piece of mind-stuff. On this basis, he proceeds to state that "when molecules are so combined together as to form the film on the under side of a jellyfish, the elements of mind-stuff which go along with them are so combined as to form the faint beginning of sentience. When the molecules are so combined as to form the brain and nervous system of vertebrate, the corresponding elements of mind-stuff are so combined as to form some kind of consciousness when matter takes the complex form of a living human brain, the corresponding mind-stuff takes the form of a human consciousness having intelligence and volition". In this way, Clifford turns the connection not only between mind and body, but also between inorganic and organic beings into a single series. On the other hand, he seems to identify mind-stuff with matter-stuff. This identity can obviously be shown by his assertion that "ejecta-elements (i. e. mind-stuffs) are connected together in their sequence and co-existence by counterparts of the physical laws of matter". This amounts to saying that the physical laws can be applied to mind-stuff.

In criticising this principle as a whole, we would first point out that, even if it is possible to

THEORETICAL PRINCIPLES

conceive of our consciousness and brain in the relation of a single series, i. e. a relation between reality and its phenomenon, we still think it hardly possible to regard the brain of human beings as the representatives of a whole series of material objects; for what holds good of the human brain does not necessarily hold good equally of inorganic beings, or even of the brains of animals. Take the animal brain first; though it is correlated with a certain psychical life, the latter seems to be far from being a reality such as is meant by human consciousness. Is not our chief reason for believing in the primacy and reality of consciousness, the fact that all material objects can exist only more or less as a modification of mind, and is it not due to the influence of the latter that a chaotic world becomes a systematic and utilitarian cosmos? On the other hand, to the animal mind the physical world seems not only to be narrowly limited, but to be a mere chaos, instead of a cosmos, owing to its lack of such an influence. Again, is it not because our consciousness seems to have an unlimited and progressive power of reflection on things, and to have a world of its own, made up of its essential and peculiar faculties, (introspection, freedom of will, etc.) that we think consciousness can exist as a reality in its own right? But the life of animals cannot go any farther than the conditions in which they have been placed once for all. Moreover, as McDougall says, "If we observe the animal's life in the descending scale, it is sufficiently difficult for us to

THE PROBLEM OF MIND AND BODY

conceive the nature of the psychical life of such an animal as a fish; it would seem to consist in mere sentience and appetite We can conceive the consciousness of the animalcule as at most but a mere alternation of the vaguest possible feelings of satisfaction and dissatisfaction or unrest". Therefore, it seems that the more divergent the conscious life of animals is from our mental life, the more is it inconsistent with the fundamental conception of the reality as symbolized by our brain. This being so, it does not seem at all justifiable to believe that the animal brain symbolizes one and the same reality (i. e. consciousness) as the human brain.

Even if we took for granted that the principle of identity might hold good in the realm of organic beings, a still more serious difficulty arises, when we attempt to apply this principle to that of inorganic beings, i. e. to assume a universal psycho-physical parallelism or panpsychism. This view is, of course, strongly supported by the evolutionist, who asserts that "the evolution of organic life has been continuous from the lowest unicellular forms up to man; at no point is there an absolute break in the series, or any indication of the incoming of mind as a new factor in the evolutionary process". Paulsen seems, on the same ground, to think that since organic life arose ultimately out of inorganic matter, we should assume that conscious life similarly arose from the elements possessed by inorganic matter. He even asserts that 'all things

THEORETICAL PRINCIPLES

are psycho-physical beings'. Therefore, according to this doctrine, conscious life exists not only in connection with particular physical events such as the brain and the nervous system, but also in relation to all processes in the physical world; for the germ of what we call consciousness may be traced to the lowest forms of the inorganic realm; that is to say, every physical event in the physical universe, alike from the vibratory motion of a molecule to the movement of the solar system in space, has its psychical or conscious correlative attributes, viz., underlying realities, which are just the same as the reality underlying our consciousness. In a word, all material facts are in a sense conscious or psychical.

In dealing with this doctrine, even though we assume that every physical object may be regarded as having a psychical life, the difficulty still remains, that such a psychical existence must be deprived of all the usual content of organic conscious life. As such a so-called conscious existence is bare and empty in content, it must be regarded as a pure conception conveying no meaning at all. It is derived entirely from a mere speculation. Perhaps there is no more truth in such a pure speculation than there is in the religious speculation which regards a star, a tree, or a stone as having a separate soul, notwithstanding the fact that these speculations have different bases. The so-called psychical life in those inorganic beings is so empty in content and vague in meaning that its existence is to be doubted. How then can we regard

THE PROBLEM OF MIND AND BODY

it as a reality in the same sense as we do our conscious life? It appears to be more reasonable to regard its physical aspect as something real rather than its doubtful psychical life as such.

From the empirical point of view, this theory might be considered true, if we absolutely ignored the gulf between the animal kingdom and the inorganic world. Even the modern biologist asserts that purely mechanical laws cannot explain 'life'. Perhaps we might urge the same criticism here as Külpe urged against the principle of materialism. "It completely ignores" he says, "the line of division between the organic and the inorganic world, though no theory of development has as yet brought the two together the difference between the reaction of the cell to stimuli and the purely physico-chemical change of one inorganic body under the influence of another is so fundamental that the metaphysics which ignores it stands convicted, at the very least, of a disregard of fact.". Again, Dr. McDougall, in regard to the same argument, asserts that "the gap between the organic and the inorganic in nature is an immense one; the two kinds of material phenomena present fundamental differences and there is every appearance of the incoming of a new factor with the first living things, a teleological factor which is capable of working against or controlling the physical law of degradation of energy, a law which seems to rule throughout the inorganic world." So obvious is the difference between the inorganic and the organic, as these two authors point out,

THEORETICAL PRINCIPLES

that it seems hardly possible to establish a doctrine of 'a single series', and also a relation of strict parallelism throughout the former and the latter.

The above may be regarded as a general criticism adverse to this theory. There are also some special serious difficulties to be encountered in regarding consciousness as similar in nature and organization to material beings, especially with respect to the view of mind-stuff, which Clifford holds.

The theory under consideration seems to be derived from the conception that as the physical universe is ultimately built up of such elements as particles, molecules, atoms, or electrons, so consciousness is, likewise, composed of some kind of atomic consciousness which can be decomposed and composed again in the same way as material elements. Clifford's view of mind-stuff is wholly based on this. Therefore, he regards elementary feelings, or mind-stuffs as something absolute which can exist by themselves without forming part of consciousness, or being demarcated from other parts of consciousness. Meanwhile, consciousness of any form in organic beings, either higher or lower, is in the same way, but in different degrees of complication, made up of these ultimate elements, viz., mind-stuffs or elementary feelings.

This seems to me to be a purely materialistic view of the phenomena of consciousness explained simply by the transformation of the physical atoms

THE PROBLEM OF MIND AND BODY

into psychical ones or so-called mind-stuffs. Again, as the laws of matter can be applied to mind-stuff, there seems to be an entire identification of material with psychical atoms. We may ask — Is there really any sound ground for such an identity? Perhaps not. First of all, we should remember that in the case of chemical division, though the material atoms are invisible, just as the so-called mind-stuffs are, yet here we have a means, in one way or another, direct or indirect, of registering their presence. This we completely fail to do in those complex psychical states which are made up of mind-stuffs, for the latter seem even more mysterious than the imponderable particles constituting the ether.

Again, if we ask why the chemist divides material things into chemical atoms, the answer is that by such a division he is able to explain certain phenomena, which could not be explained before the formation of the atomic theory. This is why the atomic theory has been such a useful hypothesis. On the other hand, if we ask why the psychologist divides mental states into psychical atoms or mind-stuffs, though we might answer, likewise, that the purpose of such a mental division is to explain psychical phenomena, we find that the result is not achieved; but perhaps the contrary, for this theory makes the explanation of certain mental states more difficult, especially the unity of consciousness, on which our personality is based.

THEORETICAL PRINCIPLES

Since consciousness is a unitary whole, it can hardly be looked upon as consisting of a mere combination of psychical atoms, each of which may be absolutely separated from other parts of the whole, for although mental processes can be divided into sensation, perception, thought, feeling, etc., we know that such a division is only introspectively possible. In reality, we never find any pure sensation or pure feeling, or any other pure mental state lying about unconnected and isolated, because all are the inseparable parts of one and the same process of consciousness. It is quite true to say as Dr. McDougall does, that "if the distinguishable elements of all consciousness (sensations, feelings, ideas, presentations, etc.) occurred as isolated elements or complexes, or in one huge jumble in which were no coherent streams or groups there would be nothing that could be called spirit or mind, but rather a mere chaos of mind-stuff".

In order to know what is meant by consciousness as a unitary whole, we should resort to the fine passage explaining this, written by the noted philosopher Lotze; — "Our whole inner world of thoughts", he says, "is built up, not as a mere collection of manifold ideas existing with or after one another, but as a world in which these individual members are held together and arranged by the relating activity of this single pervading principle. This, then, is what we mean by the unity of consciousness". If this is so, is it not difficult to see how the so-called mind-stuffs, each of which

THE PROBLEM OF MIND AND BODY

may exist by itself, can be combined together to form consciousness as a unitary whole?

Such a view might be possible, if all our mental processes consisted simply in the compounding of sensations, and the associative reproduction of sensations or ideas, as the association-psychologist suggests. But, as a matter of fact, it is impossible for us to interpret such higher mental processes as judgement, inference, the process of deliberation, the act of volition, etc., merely in terms of the association and reproduction of ideas, for these higher mental processes involve a common and special psychical essence, i. e. the teleological factor, which cannot be explained by the process of associative reproduction. It is the teleological factor that holds the stream of consciousness together, and thus organizes it into a unitary whole. We may say then, that such a teleological category is the very essence of the psychical states, especially the higher ones; and the unity of consciousness is the result of its performing this function. It is on account of this that we are presented with one more objection to this theory, viz., that psychical events are teleologically determined, while physical ones are mechanically determined.

We have already seen how Kant has shown us two real worlds, viz., an empirical reality and a rational reality. One is governed by mechanical causation and the other is a world of purpose and freedom; but after all he does not show us how they are connected. Certainly the reconciliation

THEORETICAL PRINCIPLES

between teleological determination and mechanical causation is a difficult task for the psychical monists to undertake. However, they try to escape from the difficulty by assuming that both mechanical and teleological determination can be regarded 'as running exactly parallel and issuing always in the same results'. In this way, the distinction between teleological and mechanical determination is shown to be without objective validity, and to be a purely subjective difference i. e. one process conceived of in two different ways. Is there really no objectively valid difference between the teleological determination and the mechanical determination? It seems to me that such a difference is due not only to the different ways in which we view things, but because there is a real difference between these two discovered and conceived by us. Perhaps it will suffice to notice the fundamental difference existing between these two by pointing out that the necessity of the physical process is to present itself under a purely mechanical causality, while the essence of our psychical life is self-determined. In other words, the former is forced to move by some cause external to itself, whilst the latter is incited to act by the cause within itself. Therefore, we can be sure of the consequence of the former under certain external conditions, but on the contrary, we can hardly foretell exactly the consequence of the latter under certain circumstances, for such self-determination is dependent on internal factors, i. e. purpose, end, ideal, value, etc. None of

THE PROBLEM OF MIND AND BODY

these can be explained in terms of mechanism, but all of them presuppose an essential category i. e. teleology.

In consequence of the fundamental difference between the teleological and the mechanical series, it follows that one cannot be regarded as equal in capacity and value to the other. Some other differences between these two follow from this; viz.: —

(1) A mechanical hypothesis can by no means interpret intelligibly a purposive process; while a teleological hypothesis is able to account for the mechanical aspect of certain processes which fall under it. For instance, a purposive action, once established, takes place with mechanical uniformity and regularity, as long as a repetition of the cause occurs, and the conditions remain unchanged. Thus, the end of such an action can always be secured by its repetition.

(2) The mechanical factor does not seem to be capable of working contrary to a self-determined process; but the teleological factor, as a matter of fact, is capable of controlling in some way the mechanical facts, for example, in the working of the physical law of the degradation of energy.

The more we look at the differences between the teleological and the mechanical facts, the more difficult is it for us to believe that the former can possibly run strictly parallel with the latter. Even the upholders of this theory appear at times to recognise this difficulty. Therefore, Wundt says, "The teleologically conditioned cannot be

THEORETICAL PRINCIPLES

at the same time mechanically conditioned". It might be urged just as easily on the other hand, "The purely mechanically conditioned cannot be at the same time teleologically conditioned". Be this as it may, we can hardly believe that there is, in reality, no objectively valid difference between these two after all. It is simply because idealistic parallelists cannot reconcile such two disparate factors as the teleological and the mechanical in a parallelistic relation, that they make both of them purely subjective under an ideal monistic scheme. The ground for such a reconciliation will appear unsound when we realize the intrinsic differences between these two.

In view of all the difficulties we have met with in dealing with this theory, it does not seem that the idealistic interpretation of psycho-physical relations is as satisfactory and plausible as its philosophical defenders imagine. Perhaps, we might tabulate the criticisms of this theory under two heads: —

(1) If consciousness is conceived of as ultimately derived from psychical atoms (i. e. mind-stuffs), it follows that consciousness has been built up out of something material rather than mental in nature. The difficulty of this supposition lies in the fact that the more material we are in our view of the reality of consciousness, the more we shall lose sight of its essential characteristics. The result of this will be that certain mental phenomena will never be explained at all.

THE PROBLEM OF MIND AND BODY

(2) On the other hand, if consciousness is to be regarded as a reality on account of the intrinsic and valuable nature of the psychical life of human beings, then, we can hardly regard the physical processes of the inorganic world in the same light, for the more emphasis we lay on the reality of the intrinsic nature of psychical life, the more difficult is it for us to believe that such physical processes can have a similar psychical life or underlying reality, since the latter cannot be regarded as a reality in the same sense as the former.

If the theory in question could be established from the first point of view, it would be psychomonic only in form or name, but materialistic in nature. If it were based on the second point of view, it would be simply a sort of idealism in essence, though under the form of panpsychism. Therefore, we may conclude that the theory of psychophysical idealism cannot be successfully and satisfactorily established from either standpoint.

CHAPTER IX.

THE THEORY OF INTERACTIONISM.

We have already seen that the theory of interactionism is the only one which can appeal to common experience as well as to metaphysics. Descartes is the founder of modern interactionism i. e. the metaphysical principle of dualism. He makes the fundamental distinction between the "corporeal" i. e. extension, and the "mental" i. e. thought, the foundation of metaphysics. These two substances, although distinct and independent, bear a closely reciprocal relation to one another. Descartes, however, did not go further and explain how these two substances, so unlike in nature, can act and react upon one another. It is this question which creates the greatest difficulty for this theory, and, consequently, this theory seems unable to hold the same position as the other theories.

A glance at the arguments in favour of automatism and parallelism shows us that they appear to be opposed to the theory of interactionism. Can we then say that interactionism is a theory somewhat out-of-date, and cannot make an equal claim to consideration with the other two? Certainly not, and for the following reasons: —

THE PROBLEM OF MIND AND BODY

(1). Most of the arguments in support of automatism and parallelism, which seem to be opposed to interactionism, are mainly based on the principles of physical science. It is not as yet possible for physical science to explain all the events and their changes in the world. Even modern leaders of science recognise this when they assert that the mechanical laws relating to matter are not sufficient to explain fully the facts of life.

Again, the theory of interactionism appears difficult to establish, not because psycho-physical interaction has been proved improbable, but simply because some laws of physical science, based purely on inductive generalization, seem to be inconsistent with the fact of interaction. There is still the possibility that we might be able some day to work out a superior doctrine by which the gulf could be bridged, or the gulf may remain for ever, because it is beyond the power of human knowledge to bridge it. Such a great authority on parallelism as Prof. Wundt still thinks that "in considering voluntary movements of the body we must treat them as being psychically originated, because we cannot ascertain the nature of the physiological process which initiates them; and we must make use of the conception of psycho-physical interaction, so long as we cannot complete our account of the brain processes".

Over and above this, if we are to judge any kind of knowledge by the standard of physical principles only, there is a danger not only that some of our experienced facts may be disregarded

THEORETICAL PRINCIPLES

or ignored, but that the development of human knowledge will be thus restricted to a certain extent. Dr. McDougall says: "Suppose, then, that psycho-physical interaction is a fact, that it does really occur; then, the capitulation of biology and philosophy to physical science must have the effect of bringing the course of the development of human knowledge into a blind alley, in which further progress must be ever more difficult and must involve in a sense a departure from its goal". From this we see that the establishment of the validity of the physical principle does not necessarily follow the disestablishment of the theory of interactionism.

(2) On the other hand, if we examine closely the theories of automatism and parallelism, there seems nothing in either of them seriously opposed to the principle of interactionism. For the automatist is partly in agreement with the interactionist, and only denies the truth of his theory when it is applied in the opposite direction. He cannot, however, give any sound reason for denying this, as we have seen before; but meanwhile the interactionist is not without reasons for asserting it.

With regard to parallelism, the thorough going correlation of mind and body — not only between their elements on each side, but extending to their arrangement and order as well — seems really to extend to causal relation in the parallelistic principle itself. Prof. Strong thinks that such a parallelistic view as makes the correspondence extend to causal relation is "more justly entitled to the

name of parallelism than one which merely assumes a brain event for every mental state". Again, Prof. James asserts; "The 'concomitance', in the midst of 'absolute separateness', is an utterly irrational notion. It is to my mind quite inconceivable that consciousness should have 'nothing to do with' a business which it so faithfully attends". Mr. A. E. Taylor criticises parallelism somewhat from the same point of view but on a logical ground; "It is obvious", he says, "that you cannot infer from the premises that one total state, containing both a physical and a psychical element, causes another complex state of the same kind, the conclusion that the physical aspect of the first, by itself, has caused the physical, and the psychical the psychical aspect of the second". Thus, it might be well to say that the fact of interaction seems to underlie the very principle of a thorough going parallelism.

From the above mentioned point of view, we should think not only that the theory of interaction should not be abandoned as out-of-date, but regarded as a possible hypothesis as much as any other theories can be.

Although we may regard interactionism as a possible hypothesis just as much as the other theories, yet at the same time, we must avoid the older view, maintained by some interactionists, with regard to the relation between mind and body; it is too simple to challenge comparison with the other theories. The most vulnerable point in this view is its postulation that the higher mental

THEORETICAL PRINCIPLES

states are not correlated with physical processes. From this proposition it is thought that in the case of the interaction between mind and body the causal relation consists in the passing over of the whole sphere of physical processes into that of psychical processes, and *vice versa*. If this statement were true, it would happen that in consequence of a certain nervous process there would be a temporal gap left for the psychical process to fill in. The same would happen in consequence of certain psychical processes. We may represent such a view of psycho-physical interaction by the following diagram: —



The psychical processes are indicated by the circles; the physical processes by the black discs; and the causal relations by the lines.

It is obvious that the theory of interactionism as indicated in the above diagram, is not only inconsistent with the physiological fact of the continuity of all physical processes within the nervous system, (i. e. there is no gulf which can be found in the connection of the nervous processes between the sense-impression and the muscular reaction upon it), but it also violates the law of psycho-neural concomitance (i. e. the whole sphere of psychical states is accompanied by its neural correlates). Besides, even when we look at the purely

THE PROBLEM OF MIND AND BODY

empirical facts, as stated in the foregoing chapter, there seems to be no doubt that all mental states are correlated with physical processes either negatively or positively. Therefore, such an interpretation of interaction cannot be true from either point of view.

On the other hand, as we have already said, not only is the physical process within the nervous system continuous, but the psychical process in the mental life is equally continuous. This is due to the fact that no train of any physical processes can be found in the nervous system either coming into existence without physical antecedents, or coming to an end without further physical effects; we shall find the same in any train of the psychical events. As both these continuous processes, the physical and the psychical, take place in one and the same organism, and as they are correlated so faithfully that one cannot dispense with the other, it is apparent that there must be some causal relation between them. Whatever may be their causal relation, however, it cannot be represented by a single chain as in the above diagram. Perhaps the causal relation between such two continuous systems as the nervous and the psychical can not be better expressed than by the following series of propositions: —

(1) As there is a causal relation between the elements of each series — either the psychical or the physical — within its own system, so it is true that there are no psychical events which are not more or less determined by their psychical ante-

THEORETICAL PRINCIPLES

cedents, nor physical processes that are not more or less determined by their physical antecedents.

(2) As there is another causal relation existing between the processes of the nervous system and those of mental life, so both cause and effect in each series never seem to be simple, but always complex. Therefore, though it is perfectly true to say that "no effect in either series is determined by a single cause", it is equally true to say that "no cause in either series is followed by a single effect".

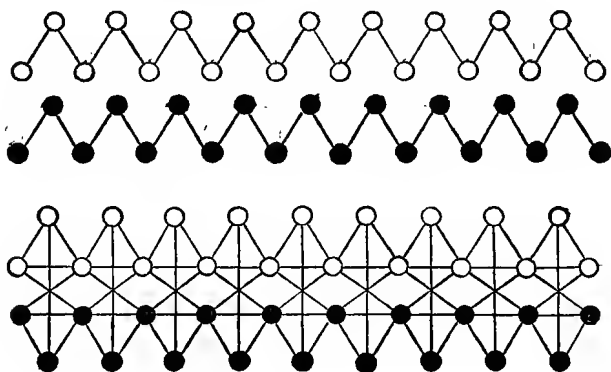
(3) As there are two sources of causal relation in the psycho-physical organism, so the cause of a psychical state or a physical process may originate either from its own or a corresponding series.

(4) No matter whether a psychical state or a physical process originates either from its own or a corresponding series, the one is always immediately followed by its corresponding correlate.

To make the above propositions clearer, let us take for illustration any psychical event. It might originate either from a psychical antecedent or from a physical antecedent. If it is caused by a psychical antecedent, it should have, at the same time, a physical correlation in its corresponding series. If it is caused by a physical antecedent, it should be immediately followed by another physical correlation, which will continue as long as it lasts. This might hold good of a given physical process in the organism. Here we should remem-

THE PROBLEM OF MIND AND BODY

ber that there is always an equilibrium between the psycho=physical correlation within the organism. In so far as there is a change on the one side, there always follows a change on the other. In other words, in consequence of the overbalance of either side, there must be an effect or influence on the other. Thus, the overbalancing of either side gives rise to the change in the psycho=physical correlation, and the change in the psycho=physical correlation results in a psycho=physical interaction. Since psycho=physical interaction presupposes a system of psycho=physical correlation, on the one hand, and consists in a change in such a system, on the other, we seem to be correct in calling it, "*Correlative Psycho=physical Interaction*". Such a theory of interactionism may be represented by the following diagrams: —



The psychical series is represented by the first diagram, its corresponding series of the phy=

THEORETICAL PRINCIPLES

sical by the second one. The third indicates very complex causal relations in the correlative psycho-physical interaction.

One might argue that if it is true that no physical or psychical event is not more or less determined by its own series, then, it seems incorrect to say that a psychical or a physical event can originate from its corresponding series as well. These two propositions might, at first sight, seem not to be consistent with one another, but what we should notice here are the few words, 'more or less determined' in the former proposition. We use the few words 'more or less determined' in this proposition because of the assumption that a psychical state cannot be completely determined by its own series, even if it originates from a psychical antecedent. For a determination in such a psychical state still depends more or less upon the condition of its physical correlation. This may be exemplified by a familiar fact. A pleasant or delightful feeling can be produced by a happy thought, but owing to ill-health, the feeling derived from such a thought may not be so delightful as it would otherwise be. The same holds good of a physical process, which is originated by a physical antecedent. For instance, a general lassitude can be caused from want of food, but if one is much interested in reading a book, he would not be troubled so much as he would otherwise be. All this is due to the fact that there is always a psycho-physical correlation keeping an equilibrium in any process within the organism. Thus,

、 THE PROBLEM OF MIND AND BODY

it is not only that either a psychical or a physical event in the organism is more or less determined by its own series, but that at the same time it is more or less influenced by its corresponding series as well.

Having demonstrated the psycho-physical relation above described, we are able to understand why Mr. Bradley, in chapter 23 of his great work "Appearance and Reality", concludes that both volition and the volitional brain process must be joint causes of motor discharge, and Mr. A. E. Taylor, in his defence of interaction, asserts that it is even possible to treat some physical events which are solely caused by a physical antecedent, 'as if the presence of their psychical concomitants made no difference at all to their occurrence'.

We have seen that interaction presupposes psycho-physical correlation, and that each side of the psycho-physical correlation is always in a complicated condition. This is why both effect and cause in either series never seem to be simple, but very complex. However, we must further remember that the cause and effect existing in psycho-physical interaction are not only complex, but vary in proportion as well. The multiplicity of physical processes may be followed by a comparatively simple psychical state and *vice versa*.

The psychologically unitary and simple", says Fechner, "are resultants of the physical manifold". We can use this to explain only one side of the interaction in psycho-physical processes, such as

THEORETICAL PRINCIPLES

sensation. It is a psychologically unitary state, which is, however, conditioned by a manifold physical antecedent. Again, such a relation can be more clearly shown in the fusion of sensations. "When two stimuli are simultaneously applied to the same sense-organs of any normal beings, they produce a change in his consciousness which is the combined effect or resultant", i. e. only a single effect in consciousness takes place. This combination, which has been proved by Dr. McDougall from empirical evidence, is not due to the compounding of the two nervous processes caused by the external stimuli, but to a unitary resultant or effect produced by their acting in co-operation upon an immaterial being. On the other hand, we might also say that the same relation holds good in the opposite direction, i. e. what is physically unitary and simple may result from what is psychically manifold. For instance, a certain volitional action might be very simple to perform, but its psychical condition may consist in very complex states, viz., a train of reasoning, a process of deliberation, then, a final decision of choice. Both of these cases (sensation and volitional movement) are examples of psycho-physical interaction in the inverse ratio. We should, however, remember that it may take place in the direct ratio as well, e. g. in the case of thought. For the conceptual process is supposed to react upon, as well as to be correlated with, 'the activity of a vastly complex neural system'.

THE PROBLEM OF MIND AND BODY

On the whole, it is obvious that the relations between mind and body are too differentiated, complex, and variable to be arranged under such a uniform and systematic law as physical science attempts to do. Nevertheless, we might summarize them into two kinds of relations: (1) psycho-physical correlation and (2) psycho-physical interaction. As we have already said, interaction presupposes a psycho-physical correlation, and at the same time, the latter really consists in a psycho-physical interaction; so the truth seems to be that the one cannot dispense with the other. It must be remembered that a correlation here means something different from the correlation meant by the parallelist. For 'correlation' in this theory exists only between the psychical and physical elements on each side. With regard to their order and interchangeability, they may be in a parallel relation, or may be differentiated and variable in other ways as well. These relations may be shown from those cases in which the relation within such psycho-physical correlation varies in different proportions as we mentioned above. This is what we mean by a "*Correlative Psycho-physical Interaction*".

Having understood what we mean by a "*Correlative Psycho-physical Interaction*" let us now take into consideration the principal arguments which attack interactionism, namely: —

- (1) *The inconceivability of psycho-physical interaction.*
- (2) *The law of the conservation of energy.*
- (3) *The principles of biology.*

THEORETICAL PRINCIPLES

(I) *The inconceivability of psycho-physical interaction.*

The incompatibility or inconceivability of the causal relation between the mental and the physical is a strong objection to the possibility of interaction between them, for interaction is only supposed to exist between things of a like nature. The brain process can scarcely be conceived of as being able to affect consciousness, or *vice versa*. This assertion implies that the law of cause and effect can hardly be applied to such entirely heterogeneous things as the brain and consciousness. Let us now consider what is the fundamental principle in the law of causality.

The all-important principle in the causal law is that, given a certain conditioning process, a certain phenomenon invariably occurs; in the absence of a certain phenomenon, its corresponding conditioning process is also absent. This being so, what is indispensable to the law of causality, is the invariable occurrence or absence of a certain phenomenon and its certain conditioning process, but the qualitative likeness between these two does not seem necessarily to be counted among the essential conditions of a causal relation. Therefore, even the fundamental law of causality seems, after all, to have nothing to say about the homogeneity and the heterogeneity of the phenomena that stand in the relation of cause and effect.

On the other hand, let us see how we can discover that there is a connection between cause and effect among material things. Experience shows

THE PROBLEM OF MIND AND BODY

us that the knowledge of a causal relation between physical objects is not necessarily due to their being of like nature, but to our repeated observation of them, though their nature can be discovered from the scientific standpoint. For instance, rubbing the hands is followed by some warmth; so we believe that the former is the cause of the latter, notwithstanding the fact that such things as molar motion (i. e. rubbing the hands) and heat are two entirely different things to any person who has no scientific knowledge. But such a difference in nature does not in the least shake his belief in the fact that one is the cause of the other. Thanks to the progress of scientific knowledge, we know that heat is itself 'a motion of particles' and its production is due to a mere transformation of molar motion into another motion (heat). Then the heterogeneous nature of the two seems to disappear. Let us now compare such a process of physical interaction with that of psycho-physical interaction.

In psycho-physical interaction, we have seen that sensation is usually regarded as produced by a physical cause, i. e. a sensory nervous process. Such a view seems to be derived from our ordinary experience just as much as is the belief that heat is produced by rubbing the hand (molar motion). The unlikeness of the sensory nervous process to sensation does not seem greater to any normal person than the unlikeness between molar motion and heat. Then, the only difference between the former and the latter lies in the fact that heat is

THEORETICAL PRINCIPLES

known as a motion of particles in itself only through scientific knowledge, while sensation cannot be identified with the sensory nervous process. This, however, does not necessarily prove the impossibility of such a fact. This being so, why can we not expect that such an interaction between psycho-physical processes, as in sensation, may be explained as clearly as the causal relation between material objects. If it might be expected that a day should come when the barrier between organic and inorganic beings is broken down and a living organism could be generated in the laboratory, we could, then, equally expect that the incompatibility between mind and body would be overcome, and a clear theory of the soul would appear in the history of philosophy.

Perhaps the obvious difference between physical interaction and psycho-physical interaction is that cause and effect between physical objects are capable of being seen or touched through perception, while we cannot, however, see a mind act upon a dense material mass, nor any nervous process react upon a mind. This is really another important factor which gives rise to the notion of the inconceivability of psycho-physical interaction. "Only experience", Prof. Stumpf says, "can show what things belong together as cause and effect". We must remember that experience does not only consist of something visible to perception, but of those things we can feel, imagine, reflect, etc. as well. Anything we have experienced by feeling, imaging, or reflecting is just as much real

THE PROBLEM OF MIND AND BODY

as those things experienced by perception. Perhaps the former is more valuable than the latter. All such things as ether, energy, atoms, and electrons are in their origin derived from ideal constructions and they seem to be more useful as hypotheses for explaining the physical universe than those things we really perceive. This leads some philosophers to assert that 'psychical causation is the only kind of causation of which we have any understanding', in opposition to those who hold that physical causation is the only thing we can understand. Thus, there seems no reasonable ground for believing only in the facts derived from our experience through perception, and not in those derived from our inner experience. Lotze tells us that "it is easy to show that in the interaction between body and soul, there lies no greater riddle than in any example of causation, and that only the false conceit that we understand something of the one case, excites our astonishment that we understand nothing of the other." Let us now further examine, from a purely scientific point of view, to what extent we can understand the case of physical causation better than that of psycho-physical causation.

We have already said that the principle of causation not only shows how a given effect follows a given cause, but how cause and effect are parts of one continuous process. This holds good of any case where both cause and effect are material. In the case of psycho-physical interaction, it seems

THEORETICAL PRINCIPLES

that all we can show is that a given psychical cause is uniformly followed by a physical effect and *vice versa*. Again, we can only feel that a psychical cause, together with its following physical effect and *vice versa*, are processes continuous with one another, but we cannot really explain how they may be regarded as belonging to one continuous process. This is mainly because of the qualitative unlikeness between the two discussed above.

In consequence of this, there is a further difference between a physical and a psycho-physical causation. The difference lies in the fact that we can show the exact quantitative relation as well as the qualitative likeness of a physical cause to its effect, but we fail to do so when one is psychical and the other physical. Because we are unable to find a common measure of the mental and the physical, we cannot find a quantitative equivalence between a sensory nervous process and sensation or between a volition and its physical movement. A causal relation, of course, can be made more intelligible when its exact quantitative relation is known, but it does not necessarily follow that a causal relation cannot be established without knowing its exact quantitative relation, for all the causal relations acknowledged to exist between the mental processes have never been taken into calculation in this manner.

On this point, Külpe maintains that "causal equivalence has nothing whatever to do with likeness or unlikeness of kind." He proceeds, "we believe in the interaction of bodily and mental

THE PROBLEM OF MIND AND BODY

processes because we see that a more intensive sensation follows upon a stronger excitation of sense, and a more vigorous movement upon a more vehement impulse of will." This shows that it is not because of the unlikeness of kind that we cannot find any quantitative relation in psychophysical interaction at all.* In experimental psychophysics, as a matter of fact, a roughly quantitative relation has been found between a change in the intensity of a stimulus and a change in that of a sensation. It is on this that Weber's law is established, viz., "Equal increments of sensation-intensity are determined by increments of stimulus-intensity whose value is in each case a constant fraction or percentage of the total value of the stimulus."

From the above statement, we can notice that the difference between psychophysical and physical causation apparently amounts to this; that in the former we are unable (1) to show a continuous process from cause to effect and (2) to measure the causal equation between them. It is, we think, on this ground, that the relation of physical causation can be clearly explained, while the relation of the psychophysical causation can only be indicated, but is still far from being explained.

To discuss this assertion, we had better first quote Lotze's words. He tells us that "we shall never see the last atom of nerve impinging on the soul, or the soul upon it, but equally in the case of two visible spheres the impact is not the intelligible cause of the communication of motion; it is

THEORETICAL PRINCIPLES

nothing but form in which we can perceive something happening which we do not comprehend." Is it not that such explanation of physical causation appears legitimate because we seem to understand its intrinsic nature thoroughly and thus to know its real intelligible cause clearly? Is it not by virtue of this that we are led to think that the relation of psycho-physical causation cannot be explained at all? All these assertions seem to be only partially true in view of Lotze's teaching as quoted above. Besides, Dr. McDougall tells us that when we examine the notion of communication of momentum by impact, we do not seem to understand the intimate nature of even the most familiar type of interaction (*viz.* physical interaction). If it is true that we cannot really understand its intimate nature, the impact in the physical interaction can hardly be said to be the intelligible cause of the communication of momentum, even though its continuous process from cause to effect can be shown, and its causal equation demonstrated. Since all these seem no more than what Lotze calls 'the forms in which we can perceive something happening which we do not comprehend'.

Here we might compare the work which can be done by a scientist in physical and chemical science with the work being done by a man's labour in industrial production. The part played by labour in production does not consist in producing matter, but only in a change of the place of an object itself or a change of form of its component parts, in a word,

THE PROBLEM OF MIND AND BODY

a displacement of matter. For all that a man's labour can do is to stir, separate, connect, insert, superpose and arrange; all of these are only different modes of the displacement of matter. Let us now, on the other hand, see how physical and chemical events take place in the scientific world. Physical and chemical events consist simply of a more or less rapid displacement of a given number of material elements in different modes of change and combination. Therefore, the work of a scientist in the physical world does not necessarily consist in comprehending the intrinsic nature of matter, but only in knowing the various forms under which the material elements have been arranged and, at most, making a quantitative calculation among the various forms, in a word, a displacement of material elements. Consequently, all that a scientist can do by his acute observation is to analyse, assimilate, decompose, compose, arrange in a causal relation, construct in an unbroken continuity, and demonstrate in a causal equation. All these things are simply different modes of exhibiting the different forms in which the system of material elements can be displaced and constructed. This is why it appears to me, that the man of science in his sphere can do no more to explain the intrinsic nature of matter than the labourer can do to produce it.

If a scientist cannot indeed realize the intrinsic nature of matter, neither can he conceive the intelligible cause operating in physical interaction. If he could even understand the forms under which

THEORETICAL PRINCIPLES

the material process goes on, still the demonstration of such form would be rather an indication of its causal relation than an explanation of it. Therefore, it seems, after all, that the same criticism which is applied to psycho-physical causation might equally well be applied to physical causation, if we investigate the latter from a deeper point of view. On the whole, we may conclude that it is not justifiable to deduce the impossibility of psycho-physical interaction from the assumption that it is inconceivable.

(2) *The law of the conservation of energy.*

In connection with the view of the incompatibility of the mental and the physical we should take account of the law of the conservation of energy. It is the fundamental principle on which modern science has been built up and adds great weight to the theory of parallelism, and at the same time tells against that of interactionism. The law of the conservation of energy may be summarized as follows: —

(a) The total sum of energy, kinetic as well as potential, in the physical universe always remains constant in its quantity.

(b) Whenever the transformation of energy takes place in any part of the physical system, the quantity of energy thus transformed is neither increased nor decreased; it is simply a matter of uniform equal exchange.

According to this law, all physical process is no more than the distribution of energy in various

THE PROBLEM OF MIND AND BODY

ways from one part to another within the physical world. Such a distribution results in no alteration of the quantity of physical energy in the universe. In this way, we can explain all physical processes by their physical antecedents, so that the physical series becomes a closed and finite system. In consequence of this, the psychical influence is swept out from the physical universe altogether.

If, on the other hand, the psychical factor is supposed to influence in any way the source of the physical process, then, it will mean that either 'there will be work done in the organism without the expenditure of energy' or 'there will be loss of energy without work being done by the organism'. Consequently, the quantity of energy in the physical universe is either increased or diminished. This statement seems strongly to support the view of the incompatibility of mind and body, especially when we see how impossible it is for the transformation or conversion of force to take place between the material process and the mental activity.

Hence comes the problem, as we have said before, whether the principle of the conservation of energy is a law which can be universally applied to all natural phenomena, or only a useful hypothesis applicable to physical facts. This is really a difficult question for the interactionist to answer, for if he recognises the universal validity of the principle, he requires to reconcile the efficiency of the mental phenomenon with the law of the conservation of energy; if he thinks that this prin-

THEORETICAL PRINCIPLES

ciple only holds good of physical facts, he has to give a justifiable reason for such an inference. Let us first examine the ways in which the interactionist seeks to reconcile the law of the conservation of energy with psychophysical interaction.

There are various ways suggested by the interactionist with a view to such a reconciliation. One is that the mind has the capacity of altering the direction of the motions between particles without affecting either its quantity or its rate, for instance, 'a force or stress applied to a moving body along a line of direction strictly at right angles to the path of its motion, deflects the path of the body without doing work, without diminishing or increasing of its rate of movement, and therefore without altering its momentum or kinetic energy'. The view that mind only guides material mechanism without doing work was first suggested by Descartes. Mind may thus be regarded as having an influence on the brain action, but without increasing or decreasing the quantity of the energy in the brain process itself.

The objection to this is that a physical movement can hardly be made to change its direction, unless a certain amount of the energy of another physical object is spent, for the alteration in the direction of a material movement is always carried out at the cost of the energy of another physical object. So it is thought that what holds good of the alteration of direction in the case of physical movement must hold equally true of psychophysical motion. Then, how can the mind alter

THE PROBLEM OF MIND AND BODY

the direction of physical motion without expending energy? This view seems unsatisfactory, unless we consider that the mind alters the direction of a physical movement in a different manner from that in which a physical movement is altered in its direction by a physical one.

To avoid the above mentioned difficulty, another view has been suggested by Prof. Wundt. This is that the mind may be considered to interact on the physical process, when the potential energy in some cases seems to be prevented by the psychical factor from passing over into the kinetic, as if, for example, after a stone has been thrown up to a given height, it could be held suspended there for one moment by a psychical factor, i. e. 'an effort of will'. Such a suggestion is derived from the observation that in some cases of the transformation of physical energy a part of the energy becomes potential or latent; the potential energy in turn, being capable of becoming kinetic again.

On the same ground, but from the physiological standpoint, Dr. Driesch declares "that one essential peculiarity of living organisms is that in their tissues the conversion of potential into active energy is liable to be temporarily suspended or postponed by a non-mechanical agency" i. e. 'entelechy'.

Dr. McDougall, influenced by this suggestion also maintains that it is possible for the mind to exert guidance on the brain process without doing work. He illustrates this by instancing the case

THEORETICAL PRINCIPLES

of the pendulum of a clock. "Now suppose", he says, "that mind could arrest it in the position of latent energy; then, if it were so held but for the briefest movement, the course of the physical events would have been altered without change of the quantity of energy of the universe". And, "if the mind could exert such an influence upon the atoms or molecules of the brain substance, it might thus play a decisive part in determining the issue of brain processes, without breach of the law of conservation of energy".

Over and above all this, we might point out another view which regards consciousness as a form of energy. Prof. Strong says, "Any view which ascribes physical action to the mind, no matter what the nature of that action, can be reconciled with the principle of conservation of energy only on the hypothesis that the mind is itself a form of energy". Such a view of reconciliation, of course, seems to bring the mental and the physical closer than the others, for in so far as we regard consciousness as a form of energy, it must belong to one and the same system as the physical process. Besides, since we cannot give a precise definition of physical energy, we have apparently no right to deny that consciousness is a form of energy. If consciousness be considered a form of energy, then, in the transformation of energy between the physical and the psychical, the sum of energy produced in the one would be equal to the corresponding amount of energy which disappeared in the other.

THE PROBLEM OF MIND AND BODY

This must presuppose the possibility of seeking a common measure for both sides. Failing this, we shall meet with the same difficulty, as we have mentioned before, of being unable to show an exact quantitative relation between the energy transformed in passing from the one to the other. Thus, to make consciousness a kind of energy would upset all the calculation of physiology, more particularly as the former is such an inexplicable and incalculable factor.

Each of the suggestions mentioned above seems a plausible method for reconciling the law of the conservation of energy with the efficiency of the mind. At the same time, none of them can escape criticism. The reason for this is that all these views seek to explain psycho-physical interaction by a purely physical law such as those on which physical interaction is based—especially the last view which makes consciousness a form of energy. It seems to me that if mind only alters the direction of physical movement without doing work, consciousness is then conceived to be somewhat in a position of inefficiency and passivity, instead of efficiency and activity. If we suppose that the only way in which the mind acts upon the body is by preventing the passage of potential energy into kinetic, we consider this explanation too simple to meet the requirements of the complex relation of psycho-physical interaction. The same may be argued concerning the view that mind is a guide similar to the pendulum swinging to and fro in a clock. However, each of these

THEORETICAL PRINCIPLES

views has its own merit, for each seems to correspond with certain aspects of the process of psycho-physical interaction notwithstanding the fact that they are insufficient to explain the relation of psycho-physical interaction as a whole.

If we seek to identify consciousness with a form of energy, we still witness the capitulation of the mental process to the material mechanism. Such a view seems to be the materialistic doctrine again only in a different form. In a word, all these results are obtained by setting forth the law of the conservation of energy at first as "a law of universal validity", then, by trying, according to this standard, to offer an explanation of the process of psycho-physical interaction. This is why each of these explanations offered has to be criticised in one way or another in the light of the whole theory of psycho-physical interaction. As a result of these criticisms, there seem to be only two more suggestions that we can make. We may suggest that it is either impossible to establish the universality of the principle of the conservation of energy or it is possible to extend the principle to the psychical sphere.

(1) We are led by the first view to think that the principle of the conservation of energy is only a working hypothesis for the physical phenomena and does not necessarily hold good of mental phenomena. In other words "the law is merely an empirical generalization whose validity extends only to those orders of phenomena of which it has been

THE PROBLEM OF MIND AND BODY

shown to hold good by exact experiment". Of course there seems no justification for the transference of this principle from a purely material system, where the mental factor is absent altogether, to a world in which both psychical and physical processes take part. Perhaps it is not impossible that this principle may never be successfully applicable to our inner life. On this point Dr. McDougall states a clear view when he says: "We may accept the law of the conservation of energy as a well based generalization for the inorganic realm. But we have no warrant for extending it to the realm of organisms, of life, And again, all living organisms show peculiarities of behaviour that are not exhibited by any inorganic aggregations of matter. The peculiarities of behaviour of living organisms are correlated with the presence of psycho-physical processes in them; and this fact of correlation implies causal relation between the two things". It is the fact that "all living organisms show certain peculiarities of behaviour which are not exhibited by any inorganic aggregations of matter", i.e. 'the psycho-physical process', to which our second view will call special attention.

(2) Energy can only be defined generally as 'the capacity of doing work'. This definition has a very broad meaning, and energy thus seems to be simply constructed by our imagination for explaining the processes of physical phenomena. Hence, no one as yet seems able to give a precise and clear

THEORETICAL PRINCIPLES

definition to physical energy in order to mark it off from the processes of mental life. In so far as physical energy cannot be literally and clearly defined, we may be excused for extending the great principle of energy to the sphere of psychical process. Even so, we must remember that those views which are based on purely physical laws must meet with criticism in one way or another. Therefore, if consciousness be considered a kind of energy, we must be careful not to identify it completely with physical energy, for as we have seen 'the peculiarities of behaviour of living organisms are correlated with the presence of psycho-physical processes'. This is what we call the psycho-physical system, in which both the mental and material participate. It is from this system, and not from the physico-chemical system — in which only material processes operate — that we should try to explain consciousness as a form of energy, for the organic process involves some peculiar features which cannot be described in terms of the physico-chemical process. We might use the word 'entelechy' as Dr. Driesch does, to express this psychical energy; but we think that its function is wider than postponing the conversion of potential into active energy. Moreover, we must know that the hypothesis of such an entelechy aims at explaining the facts of psycho-physical interaction as a whole, in other words, it is supposed to serve as a channel for the transformation of energy from the psychical to the physical sphere, and *vice versa*. Therefore, this theory should be constructed with the facts of

THE PROBLEM OF MIND AND BODY

mental life in view as well as with the empirically deduced mechanical laws. What holds good of the transformation of energy in a purely physical sphere does not necessarily hold good of the communication of energy in a psycho-physical one. So the fact that an exact quantitative relation can be shown in the case of the transformation of physical energy, does not necessarily prove the impossibility of the transformation of energy in a psycho-physical process, simply because the psychical factor is inexplicable and incalculable. On the whole, we might conclude that it is not impossible to extend the great principle of energy to the sphere of mental process; only we should regard such 'psychical energy' or so-called 'entelechy' as something based on a psycho-physical system, and somewhat different from the purely physical energy, which is based on a physico-chemical system.

(3) *The principles of biology.*

Another important argument against interactionism is to be drawn from certain principles of biology. We have seen that both automatism and parallelism are supported by the hypothesis of the continuity of the evolutionary process from inanimate things to living organisms. This view may rule out psychical influence from playing any part in the course of the evolutionary process, (as in automatism) or may suggest that a conscious factor goes hand in hand with the material system from the very beginning of evolution (as in parallelism).

THEORETICAL PRINCIPLES

ism). It is on account of this that the automatist and the parallelist, notwithstanding the fact that the explanations they offer are rather different, each boasts that his doctrines can explain the origin of consciousness, while the interactionist leaves it a mystery. Nevertheless, this statement does not by any means give the death-blow to interactionism, for when we come to consider biological theories as a whole, we find certain biological principles in favour of interactionism just as much as of the other theories. Let us first give an account of the various biological theories: —

(1) Darwinism. — Darwin explains the genesis of species by 'the accumulating of invisible variations'. From this it is assumed that the evolution of species and the adaptation of structure and function to external circumstances are determined by the blind mechanical process of natural selection. The special feature in the process of natural selection is the struggle for existence of the organism. Consequently, neither organs nor functions evolved by natural selection are without utility, for all of them have been evolved for one aim, i. e. the struggle for life. The question here is whether such insensible variations and such a natural selection are sufficient factors for the determination of those organs and functions. If not, it seems possible that an inner factor, i. e. mind, has also played a part in the course of evolution. This leads us to consider the older theory of Lamarck.

THE PROBLEM OF MIND AND BODY

(2) The Lamarckian theory. — Lamarck regards the adaptation of organs and functions in species as having been achieved by the determining factor of 'the very efforts of the organism', for the purpose of adapting itself to its various circumstances and situations. It is on account of this that all reflex and instinctive actions are conceived of as having been once consciously performed by our ancestors. The essential feature of this theory is the belief in the transmissibility or inheritance of acquired characters from generation to generation.

(3) Neo-Darwinism. — This theory denies the transmissibility of acquired characters in the evolutionary process and tries to explain organic evolution by natural selection from a certain great number of indeterminate and spontaneous variations, which are due to 'the difference inherent in the germ borne by the individual in the course of his career'. Such determinate variations due to the differences inherent in the germ borne by the individual are regarded as purely accidental and individual. But to regard these differences as accidental and individual is inconsistent with the fact that 'they might appear at the same time and in the same form in all the representations of the same species or at least in a certain number of them'. This is why some authorities hold that this theory is not sufficient to explain organic evolution.

(4) The theory of 'mutation'. — This theory is based on the conception of a 'tendency to

THEORETICAL PRINCIPLES

change', happening in a certain species after a certain lengthy period. Mutations, in organic evolution, take place in the modification of structure or of functions. They are supposed neither to be due to some kinds of fortuitous variations nor to be the result of an accumulation of happy accidents, though they might appear suddenly in a given species. According to recent research in biological processes, it has been found that such mutations really take place in different species from generation to generation. This theory certainly seems to surmount some difficulties which Neo-Darwinism has failed to meet.

Each of the above mentioned theories, being supported by a certain number of facts has its own merit. It is beyond our scope here to discuss fully these theories on their own merits. For our present purpose it is enough to inquire how far these theories support or reject the theory of interactionism.

The theory of Darwinism certainly does not seem to support psycho-physical interaction. For it regards the genesis of species and the adaptation of structure and function to environment as being capable of explanation by the blind mechanical process of natural selection. If we go further in our investigation of the Darwinian system, we shall find that there is an essential factor assisting such natural selection, i.e. the struggle for existence. On the other hand, there is a certain result following from such natural selection, viz., all organs and

THE PROBLEM OF MIND AND BODY

functions are evolved for utility. It should be remembered that as the struggle for existence implies a kind of 'persistent striving', so there is a conscious factor involved in it, i. e. teleological factor, and again, that if consciousness is something evolved, it must be for the purposes of utility. This being so, consciousness seems, after all, to have been an essential and active factor in the evolutionary process. We can, therefore, be excused for saying that the theory of Darwinism is in part compatible with the theory of interactionism.

The Lamarckian view, which ascribed to 'the efforts of the organism' the process of adapting, for purposes of utility, the organs and functions to the conditions of their existence, is the theory most favourable to interactionism, for such 'efforts' obviously imply consciousness and will. Again, this theory presupposes the transmissibility of acquired characters from ancestors. This is supposed to play an important part in determining the direction and course of the modifications of structure and function in the variations of the offspring. If such inheritance of acquired characters really has taken place as the essential factor of those determinate variations, it is plain that mind must have had great importance and weight through the whole course of organic evolution.

The denial of such inheritance by Neo-Darwinism, indicates a denial that consciousness has played any part in the determination of the organic evolutionary course. The explanation offered by this theory for organic evolution is based purely

THEORETICAL PRINCIPLES

on the mechanical theory of life, i. e. natural selection from a great number of indeterminate but spontaneous variations. Certainly, the principle of the inheritance of acquired characters cannot be consistent with this theory, for it has been found that the inheritance of all the specific characters of an organism cannot be explained 'mechanically'. This being so, is it not because the inheritance of acquired characters cannot be mechanically explained that Neo-Darwinism denies the fact of such inheritance? If this is the case, the ground for the denial of such inheritance does not seem to be at all sound.

With regard to the theory of mutation, there does not seem much to be said either for or against the principle of interactionism. But we must remember that this theory is not necessarily compatible with the mechanical interpretation of life, for mutations are not supposed to be either some kinds of fortuitous variations or the result of the accumulation of happy accidents; they are merely necessary to explain the facts actually happening in different species in the course of evolution. All we can see in the mutations is that they must presuppose 'a tendency to change'. If this be so, we might then suggest that such 'a tendency to change' has a teleological factor in it. Perhaps, in this way, this theory seems to be rather for, than against, interactionism.

From a review of these biological theories, we see that the Lamarckian theory and Neo-Darwinism are two rather opposite theories; the one is

THE PROBLEM OF MIND AND BODY

for, just as much as the other is against, the theory of interactionism. But it should be noted here that it is not on a sound basis that Neo-Darwinism attacks the principle of the inheritance of acquired characters. Besides, it has been argued, by some noted authors, (especially by Prof. Bergson lately) that the mechanical theory of Neo-Darwinism is insufficient to explain organic evolution. If so, Neo-Darwinism is not in itself a satisfactory theory. With regard to the other two theories, i. e. Darwinism and the theory of mutations, they do, in some respects, as we have seen, support the theory of interactionism. Therefore, balancing biological arguments for or against interactionism, we can safely say that the arguments against interactionism are no more cogent than those in favour of it.

Ultimate arguments in favour of interactionism.

In the foregoing discussions we have seen that even the strongest arguments against interactionism, viz., the incompatibility between the mental and the physical, the principle of the conservation of energy, and certain biological principles, do not necessarily rule out psycho-physical interaction as impossible. And from what we have urged before, perhaps they do not even affect the validity of this theory. Besides these special arguments, there are a number of ultimate problems with regard to the theory of interactionism, which have to be examined and answered by the interactionist,

THEORETICAL PRINCIPLES

e. g., What do we mean by the conceptions of mind and matter, which are supposed to interact upon one another? How do they exist and what is their nature? How can mind and matter be ultimately connected? What is their real relation? Is the notion of interaction able to indicate or explain their relation? If it is, how can we explain the ultimate reality by the principle of interactionism? Of course most of these questions have to be dealt with in the light of metaphysics; but we must not forget to look at the empirical standpoint, if necessary.

Is not interactionism sometimes attacked because it seems to be simply a combination of naïve realism and dualism? Interactionists appear to think of mind quite as equally real and distinct a thing as matter, and that the former exists alongside of the latter; so the one is naturally expected to act on the other. Meanwhile, do not the supporters of interactionism seem to neglect the question of what we mean by matter or mind, which are asserted to react reciprocally? The doctrine would certainly be ambiguous, if interactionists failed to give a clear answer to the above question. This is, indeed, a criticism which we might apply to current interactionism. But we must recognise at the same time that the same point might also be used to criticise the current theories of automatism and parallelism. To answer the question at issue, let us examine first of all the two notions — mind and matter.

THE PROBLEM OF MIND AND BODY

(1) *The conceptions of mind and matter.*

We must remember that mind and matter are correlative and supplementary; one seems to have no meaning except in reference to the other. Consciousness could not manifest itself without an object; nor could matter be revealed without consciousness.

We have seen that most modern philosophers hold that physical objects have no existence apart from mind, and that the former seem to manifest themselves by being more or less a modality of the latter, for if mind does not exist, neither does matter. The sky, the mountains, plains, houses, trees, flowers, are all material objects, but none of them can be known except through the medium of the perceptual processes. Colour, light, sound, taste, and smell, are different qualities of matter, but their existence consists in our consciousness of such states obtained through sensations. The ether, atoms, molecules, and electrons, energy and momentum, are different ultimate or primitive constituents and modes of matter, but their manifestation is due to the constructive process of imagination and thought. Even though we may not deny that the physical world would still continue its existence after ceasing to be perceived, yet it is through our being able to imagine the existence of such a world that it does exist. We are thus led to believe that it is a possible perception to any mind which can perceive it. Therefore, no matter of what kind

THEORETICAL PRINCIPLES

matter is, there is always to be found a psychical state more or less corresponding to it.

Let us now take a glance at the psychological phenomena of mental life, viz., sensations, perceptions, imagination, recollection, thought or reasoning, desire, attention, volition, &c. All of these no doubt seem to be mental phenomena. We may inquire — Is there any one of them which is purely subjective? There seems to be none, if our reflection is correct, for reflection shows us that in all these mental processes we can trace two elements, viz., the objects known and the knowing mind — although these two elements are always combined. In support of this, we may quote M. Binet's words, "Every sensation comprises an impression and a cognition. In a recollection there is, in like manner, a certain image of the past, and the fact consisting in the taking cognizance of this image. It is, in other terms, the distinction between the intelligence and the object. Similarly, all reasoning has an object; there must be matter on which to reason, whether this matter be supplied by the facts or the ideas. Again, a desire, a volition, an act of reflection, has need of a point of application. One does not will in the air, one wills something; one does not reflect in the void, one reflects over a fact or over some difficulty." All this shews that consciousness must have its content. Consciousness, without content, is empty, and it cannot be conceived. Such content in consciousness is originally derived from matter. Therefore, in so far as some content or some ob-

THE PROBLEM OF MIND AND BODY

ject is found in every mental process, such content or object is the source from which we can trace out the elements which are derived from matter. This being so, even what we call psychical states are practically a combination of two elements, i. e. mental and material, though the latter can hardly be traced out except through the mental process of reflection.

The dual combination found either in so-called mental or in so-called physical phenomena may be metaphorically compared with the natural combination of form and substance in any material objects. We cannot really separate the form of a thing from its substance, for there is no form without substance, nor any substance without form, as Aristotle points out. The one is always bound up with the other. In a similar way, we always find mind and matter inseparable from one another in every real fact or phenomenon. Thus it seems that mind and matter, like form and substance, have each an incomplete existence, and neither of them can be realised or understood without the other. This being so, we no longer find, on the one hand, the so-called 'mind', destitute of all physical aspects, or on the other, the so-called 'matter', void of all mental factors, but a system of psycho-physical unity, on the one hand, and a system of physico-psychical unity, on the other. Therefore, in the end, a clear boundary line cannot be drawn between these two systems, and consequently a clear definition cannot be given to either of them. Here we can only repeat what we have

THEORETICAL PRINCIPLES

said before. "Mind and matter are two things correlative and supplementary", for each of them can only be partially viewed in its own limited sphere.

It is because of the constant combination of the physical and the mental that some philosophers believe the question of the relation between mind and body to arise from a false distinction, and the distinction between these two in a mere abstraction to be illegitimate; for they affirm that all knowledge is derived from experience. In examining the nature of our experience, we find that it consists, neither in matter only, nor in mind only, but in a unity of duality (i. e. of objective and subjective elements). Is such an abstract distinction of matter and mind illegitimate? To discuss this we must consider the next question.

(II) *Should there be a division between, or separation of mind and matter?*

We admit that our experience consists in a unity of subjective and objective elements. But if we return to examine the way in which our ordinary experience is formed, there seem to be two different factors operating, viz., the mental and the material. For instance, anybody who has perceived something, can, after a moment's reflection, notice this very obviously in the process, since there is a difference between the object perceived, i. e. the material, and the consciousness which perceives it, i. e. the mental. On the other hand, it is apparent to any one that there is a difference between the observation of

THE PROBLEM OF MIND AND BODY

an external object or the body of another person, and the observation of the internal world or the mind of another, for such a one will find that he can see a person's body only, not his thought, and he has to infer the thought. It is on account of these reflections upon our ordinary experience, that we generally make a distinction between things which are spiritual, internal, and non-spatial, and things which are substantial, external, and spatial. Such a distinction is convenient for practical purposes as well as necessary for theoretical purposes. If we do not draw a line between mind and matter, there will be much confusion and disorder in our thought, as well as in our language. If we told an ordinary person that a tree is a modality of the psychical state or that thought is ultimately derived from matter, he would think that these views were nonsense, for his experience is to the contrary. Therefore, the distinction between mind and body is quite legitimate, in so far as it is convenient for practical purposes.

We have compared the connection between mind and matter with that between substance and form. A similar comparison may here be made to explain the distinction in theory between mind and matter. We can treat the substance of a thing alone without troubling to know what its form is, and we may also treat the form alone, without considering its substance. Such a separate treatment of form and matter can be found in logic. Again, in the sciences, geometry teaches us only the forms of things, viz., the sizes, the shapes, &c.,

THEORETICAL PRINCIPLES

while on the other hand, chemistry treats of the substance or the material elements of things. The same may be applied to the distinction between mind and matter for a theoretical purpose. Psychology, logic, and ethics, are sciences treating of the mental world. Physical sciences, on the other hand, treat of the material world. In order to make each group of these sciences become independent subjects of study, and to explain each of these two groups on its special ground, it is necessary first of all, to make a distinct division between mind and matter.

Finally, we may say, that it is both possible and necessary to make a distinction between mind and matter. It should, however, be borne in mind that such a distinction is not a merely abstract one, as some philosophers think, neither is it an absolute one, as common belief supposes. However, in consequence of this distinction, the next question arises: —

(III) *What is, after all, the ultimate relation between mind and matter?*

It is because we always find a union of mind and matter in every real fact or phenomenon that we are forced to believe there is a close relation between them. On the other hand, it is because we are able to make a separation between mind and matter on reflection that we are sometimes inclined to regard them as unrelated or dissociated. A French author (M. Flournoy) shews this in the following statement: —

THE PROBLEM OF MIND AND BODY

“Body and mind, consciousness and the molecular cerebral movement of the brain, the psychical fact and the physical fact, although simultaneous, are heterogeneous, unconnected, irreducible and obstinately two.” He adds again, “All that we can say to connect two events so absolutely dissimilar is that they take place at the same time . . . This does not mean that we wish to reduce them to unity, or to join them together by the link of causality . . . it is impossible to conceive any real connection, any internal relation between these two unconnected things.”

Is there really no connection between these two things, because of their distinction and disparity? It seems to me that perhaps it is only by virtue of the distinction and disparity of mind and matter, that the relation or association of these two becomes possible, and that interactionism seems to be the only theory that can explain the natural relation between mind and matter. Let us now examine the following question: —

(A) How does the ultimate relation or association of mind and matter stand to the basis of their distinct and opposite nature? In dealing with the question at issue, we should first inquire into the distinct and opposite characteristics of mind and matter. Philosophy reveals to us some of the antitheses between them, namely: —

(1) One is extended and the other is unextended.

(2) One is material or substantial, and the other is spiritual.

THEORETICAL PRINCIPLES

(3) One consists of a world of divisible multiplicity, consequently, it is calculable; the other consists of a state of abstract unity, so that it is incalculable.

These antitheses are due to one cause, the incomplete existence of mind or matter, and lead to one result, the constant unity of these two incomplete existences. In order to become a complete existence, one has to be correlated with the other. It is because of the limit or definiteness of the extended, substantial, and calculable factors, that their antithetic factors such as the unextended, spiritual, and incalculable are needed to supplement them. In the spiritual and unextended, we find that it can represent a multiplicity of things substantial, and extended. In the incalculable and unitary, we can find that 'one is for many as well as in many'. Again it is due to the fact that one system is purely mechanical and necessary that another system of intelligence and purpose is needed to arrange it into a more utilitarian and valuable condition. Therefore, one seems to be indispensable and correlative to the other, although one is limited by the other. We might compare this with two incomplete things. Neither of them seems to be useful or valuable — perhaps even unconnected — when they are viewed apart. But as soon as they are combined in accordance with their special structure, they become a complete thing, useful and valuable. The same may hold good of the unity of such antithetic factors as mind and matter.

THE PROBLEM OF MIND AND BODY

From this we see, that the unity of mind and matter has naturally resulted from their incomplete and antithetic factors; one of these antithetic factors is just needed and naturally fitted to unite with the other. This is why I say that the ultimate association of mind and matter seems to consist in the very fact of the disparity and antitheses of the characteristics between them. However, though the union of mind and matter is based on their antithetic nature, there must be some way in which the one is associated with the other. The most natural way for them to become associated seems to be through the process of interaction. This leads us to the second question.

(B) How does the natural association of, or relation between mind and matter consist in the process of their interaction? To answer this question we may refer to Lotze's view. Having shown that a bond does its work through the connection of its own parts, and must rest, in the end, on their own interactions, and again that the binding force of a bond consists simply in the interactions flowing from the inner relations of its parts to one another, he asks, "Why should the case be different between the body and soul?" He adds again, "Their union consists in the fact that they can and must act on one another, and no external bond which embraced them both could supply the place of this capacity and necessity, unless its inclusion of them were already based on their own nature." This seems to me to be a comprehensive explanation both of the nature, and

THEORETICAL PRINCIPLES

the inner relation of psycho-physical interaction from a deeper point of view. If we further ask why their union consists in the fact that they can and must act on one another, the answer would be, that the ultimate reason seems to be based on their antithetic and disparate characteristics, since there seems nothing but mind on which matter can and must act, and *vice versa*. In this way, it can be seen that the union of mind and matter is naturally and entirely formed through the process of their interaction, notwithstanding the fact that the ways in which they interact on one another are complex and various. "Whatever number of different interactions," says Lotze, "body and soul can effect in virtue of the relation of their natures, so many bonds are there which unite them and hold them together." This shows that there are different courses through which the one is united with the other by one and the same relation of interaction.

(IV) *The whole sphere of our experience and knowledge may be interpreted in terms of interaction.*

We have seen that our experience is a unity of subject and object. But, as a matter of fact, such a unity seems to be a result of interaction between two systems, i. e. the mental and the physical. Our experience begins with sensation. From what is our sensation derived? It is a result of our consciousness of an objective stimulus mediated by a certain physical modification in the

THE PROBLEM OF MIND AND BODY

brain. In other words, as a result of the interaction between a nervous change caused by the external world and a mental state of being conscious of what it is, sensation arises. Since sensation is a resultant of the two, working in combination, so its nature is determined both by the nature of that which acts, and that which is acted upon. Perception is really an extension of sensation, though more complex. Its process, too, consists in a relation of interaction. Prof. Bergson points out that "consciousness and matter, body and soul, can be seen to meet with each other in perception". We may ask, how does such a meeting between consciousness and matter take place? It seems to consist in no other form than that of interaction. On the other hand, if we recognise such a meeting between mind and matter in perception, we are able to distinguish clearly two elements in it, viz., the object of cognition and the mental activity itself. The former is a passive, whilst the latter is an active state. When we conceive of such an active state as an entity or being, it is sometimes called a subject, a spirit, a soul, or an Ego. All these terms are after all only different expressions of one and the same entity. Lotze says: "A sensation without a subject is nowhere to be met with as a fact," and again, "Any comparison of two ideas, which ends by our finding of their content like or unlike, presupposes the absolute indivisible unity of that which compares them". This statement that there is always a subject playing an active part in the process of gaining

THEORETICAL PRINCIPLES

experience or knowledge seems quite true, in so far as we are able, by reflection, to make a distinction between a subjective and an objective side. But at the same time we must not be tempted to think that the former has an independent existence altogether, so I prefer to call it a 'cognitive subject' rather than a soul or Ego.

We have seen that such a distinction between a cognitive subject and an objective factor is not confined only to sensations and perceptions, but can extend to other mental states as well. Therefore, we may say that consciousness and matter meet with one another not only in perception, but also in other mental states. We know that when perception is over, there is left behind a psychophysiological disposition, and that such dispositions form a world of images. Imagination is a state in which our cognitive subject meets with an objective world of images through a process of their interaction. At a higher stage we have concepts, which form the system of conceptions. The process of our thought seems to consist in interaction between the cognitive subject and the objective system of conceptions. Desire is a result of interaction between a cognitive subject and an objective world of desirable ideas. In volition, or volitional acts, there is obviously a relation of interaction between the cognitive subject and bodily change — either in motor discharge or in muscular movement. Therefore, the function of the cognitive subject is not only cognitive, but conative as well.

THE PROBLEM OF MIND AND BODY

The above processes are the sources from which our practical and theoretical knowledge is derived, but it should be noted that any one of these processes consists first in a meeting of consciousness and matter (though under various forms) and then a natural course of interaction between the cognitive subject and the objective world. As a result of such interaction, our experience and knowledge are gained. For this reason we may, it seems, explain the whole sphere of gaining experience and knowledge by the process of interaction between so-called 'matter' and so-called 'mind'.

(V) *The so-called 'ultimate reality' may also be interpreted by the principle of interactionism.*

Interactionism implies the metaphysical theory of dualism, as we have mentioned before. It seems then, at first sight, that, if there were such a thing as reality, it should be, according to this theory, dualistic; in other words, there should be two fundamental realities, i. e. mind and matter. Is this correct? We can hardly think that mind and matter should be regarded as two separate realities unless they belong to two absolutely independent and distinct worlds. It has been shown that matter and mind are only correlative conceptions, and are always found united together even in the things which seem to us purely material, or in the phenomena which, we think, are purely mental. Perhaps the real difficulty for the philosopher is not to unite them but to separate them absolutely

THEORETICAL PRINCIPLES

from each other. In so far as we are unable as yet absolutely to separate the one from the other, the view which regards mind and matter as two ultimate realities cannot be defended. Besides, such dualistic realities seem to argue that each of them can exist in its own right; as a matter of fact, neither mind nor matter has a complete existence of itself, as we have already seen.

On the other hand, we have said that it is possible to make a distinction between mind and matter, and we should have such a distinction especially for theoretical purposes. If that were the case, it would also be legitimate for theoretical purposes to regard mind and matter as two separate realities. It must, however, be remembered that, though we maintain that it is possible to make a distinction between mind and matter, yet we deny that there is an absolute distinction between them. Although we hold that for the convenience of treating different groups of studies, there should be a separation between the physical and the mental, yet we ought to remember that the question of reality belongs to "the ultimate of ultimate problems." Therefore, we must go further, and, instead of confining ourselves to a certain group of studies, investigate as a whole the system which is made of mind-matter stuff, so as to see what relation it holds to what we call the ultimate reality. We may quote Lotze's words to explain this: "We should reserve," he says, "for each of these two groups (mental and physical) its own special ground of expla-

THE PROBLEM OF MIND AND BODY

nations; it would be going too far to assert that the two principles, which we must thus separate, necessarily belong to different sorts of substances." Again, "Every element of reality unites in itself the two primitive qualities, from one of which mental life may arise; while the other contains the condition of a phenomenal appearance as matter." To know what we mean by a reality, we should take as a clue the assertion, "Every element of reality unites in itself the two primitive qualities." However, let us now glance at what other theorists understand by a reality.

The materialist asserts "matter creates consciousness as well as the physical universe; therefore, it is only matter which can be existent in its own right, and should be called the reality." The idealist asserts, on the contrary, "Thought creates the universe; the whole physical world is nothing but representations and ideas, i. e. the ultimate cause is consciousness. Therefore, only consciousness can be regarded as the fundamental reality." We do not agree with either of these points of view. The whole system of the universe should not, and cannot be, regarded as entirely identical with either matter or consciousness, for each of them plays an equally active and important part in it. We cannot see how either mind or matter can claim to be the only reality.

Nor do we agree with the solipsist who, denying the existence and reality of the physical universe as well as the existence of other minds, asserts that only one's own ideas and thoughts are the reality,

THEORETICAL PRINCIPLES

for we must believe in the existence of a physical universe of which our knowledge is obtained through sense-experience, as real as our own thoughts and ideas, and still more in the existence of other minds. Besides, it is possible that our thoughts and ideas are incapable of formation without presupposing such a universe. Therefore, it seems impossible that reality is created by oneself alone, but must be partly due to external influence, i. e. something real other than oneself.

Believers in things-in-themselves either as something unknowable, or at most as something purely ideal, assert that only things-in-themselves are realities and that both mind and matter are only the appearances of realities. This theory seems to be based on the view that "all the great realities escape us". We have already criticised this theory in the foregoing chapters, and here we should merely like to point out that it is possible for us to fancy that there is such a thing as a thing-in-itself, though we admit that such a fancy is too speculative and too high to be fully realised; for even Kant thinks it no more than an pure idea, which cannot be applied to anything. Therefore, it is not necessarily the idea of the possibility of the existence of a thing-in-itself that we do not agree with, but the thinking that only the thing-in-itself is reality. It would be much safer for us to consider it as something unsolved than assume it to be the only reality.

Then, what do we mean by "reality?" To understand what reality is, we must remember, first

THE PROBLEM OF MIND AND BODY

of all, that neither pure matter nor pure thought is entitled to be called 'reality', for a reality must be fuller and clearer in meaning than pure matter, on the one hand, and fuller and richer in content than pure thought on the other. If this is so, we may mean by reality "something systematic, orderly, and unitary, which consists in an adequate thought, and also in a sufficient matter." It should be noted that an adequate thought is conditioned by, or presupposes a sufficient matter, and again that the degree of an adequate thought is always proportional to the quantity of sufficient matter supplied and *vice versa*. Thus it seems that reality can only be revealed to us in a fuller and richer manner by degrees, though it is doubtful if such a reality can ever be perfectly and fully realised.

Though 'reality' cannot be perfectly realised, we are always in the way of realising it. What is the way by which we are getting to know it? Through our finding out the real relations between things. Whatever object we may perceive or think of always bears some relation to other objects. But such relations between things revealed to us may be sometimes false, or again may be manifold and ramified in very various ways indeed. Nevertheless, we must attempt as well as we may, to find out the relations existing between things, and to arrange them into an orderly and unitary system by thought and reflection. The more we reflect on and think over them, the clearer and fuller will be our view of their true relations, and the more we

shall be able to understand things in a systematic way. Here the question arises: — Should such relations be attributed altogether to the things perceived, or be regarded as given to things by the mind? To this question our answer is, “Neither”, for if the former view be true, the mind would be shown to be purely passive, while, the latter being true, such relations would seem to be a pure invention of our consciousness, instead of being possessed by things-in-themselves. We must not forget that such relations cannot be existent in the absence of the things to which they belong, nor can such relations be established as real in the absence of the mind in which they arise. In short, such relations do exist between things-in-themselves, and are discovered and established by our mind. Therefore, though it is the mind which sets forth the conditions necessary for the establishment of such relations between things as real, yet we should not go further, and say that such relations are created or invented by our thought.

If the above statement is correct, the truth seems to be that it is the mind which gives the categories or forms to ‘reality’, and matter which supplies its material or substance. To a scientist the latter exists in a mechanical and physical world, the former in a system of scientific thought. To a philosopher, the latter consists of a conceptual world of matter, and the former of a system of abstract principles. Here we still find that the relation between these two systems is in a form

THE PROBLEM OF MIND AND BODY

of interaction, if we give a wider meaning to 'interaction' here than we did before, for one system can always be made more explicable, worked out in a fuller and clearer manner, by the development of the other system. Some truth arrived at in the one system always suggests or presupposes some truth in the other.

As a result of such repeated mutual influences between these two systems, an agreement is reached between them. In consequence of such an agreement there follows a union between them. It is through a union of these two systems that 'reality' is built up. The reality is revealed to us in different degrees, according to the degree of the foundation upon which such a union is based, therefore, the union of the mental and the physical systems, on a scientific or a metaphysical basis, is much firmer and more coalescent than their combination through sense-experience alone. For the former is based on a systematic and orderly agreement between a well-organised objective world and a unitary-comprehensive subjective system — especially in metaphysics — whilst the latter is loosely and externally connected through our ordinary experience. This is why some idealists do not regard sense-experience itself as reality, but only as a means to reality, because from sense-experience we cannot get "a final and satisfactory report". Meanwhile we must not be tempted to think that there is no reality at all in the world of sense-experience, for it is only

THEORETICAL PRINCIPLES

relatively, and not absolutely unreal, that is: "It is unreal as the embryo is unreal as compared with the fully developed man", to quote the words of Prof. Mair. Therefore, we must admit that what we experience by our senses must be, in some sense or degree, real, and not different from the ultimate reality in kind, only in degree. Besides, even the reality that a philosopher expects to work out is, in a sense, somewhat different from that brought to light by a scientist, though they must be coincident in the end; for the scientist wants to know certain aspects of the reality, whilst a philosopher must inquire into the whole sphere of it. It would not be called "philosophy" if the author of it only drew attention to certain special knowledge in the hope of arriving at reality. Nevertheless, no matter what reality may be discovered either by the scientist or by the philosopher, we must remember that it is as yet far removed from the "ultimate reality" in its full sense. On the other hand, we should bear in mind what Lotze says, — "Every element of reality unites in itself the two primitive qualities" (i. e. matter and mind). Therefore, we might say in the same strain that whatever 'reality' may be, it must presuppose, from its beginning to the highest level reached, an agreement between subject and object, on the one hand, and a union of the mental and the material systems, on the other. From what we have already said, it seems that a union of these two can only be successfully established through a system of interaction. If this is true, both matter

THE PROBLEM OF MIND AND BODY

and mind seem to have an equal claim to be of the essence of reality. Thus it appears that the so-called 'ultimate reality' can also be explained by the theory of interactionism.

CONCLUSION.

If we had to give a final verdict as to the value of these three theories, viz., automatism, parallelism, and interactionism, we should say that the theory of automatism can hardly be established either from the scientific or from the metaphysical standpoint. Besides, neither the difficulties of parallelism nor of interactionism can be disposed of by the theory of automatism, while the latter does not seem to possess the chief merits of either of the other two. "If any metaphysics", says Külpe, "is justly to be termed dogmatic, it is the materialistic." We might say, "if there is any one of these three theories, which cannot hold an equal position in the field with the other two, it is "automatism."

If this is true, there are only two theories left for us to deal with, viz., parallelism and interactionism. We have seen that each of these theories has its own merit and weakness in view of certain facts or principles. Nevertheless, if what we have argued, in the foregoing chapters, be true, it seems that, looked at as a whole, the facts and arguments arrayed against parallelism are not so easily answered as those against interactionism. Besides, if the theory of parallelism is to be estab-

THE PROBLEM OF MIND AND BODY

lished, interactionism must be swept away altogether. On the other hand, if the theory of interactionism is established, the principle of parallelism can be included in it, though the parallel line does not run so strictly as the parallelist maintains. Moreover, in this case, the principle of automatism may still remain valid, in so far as it can be included in the doctrine of interactionism. Therefore, it seems to me that interactionism is the only possible theory capable of being applied to and explaining the whole sphere of the relationship between mind and matter, and of reconciling the other two theories.

